DECEMBER 7, 1953

NEWS ISSUE

Electrical World

Price 35 Cents

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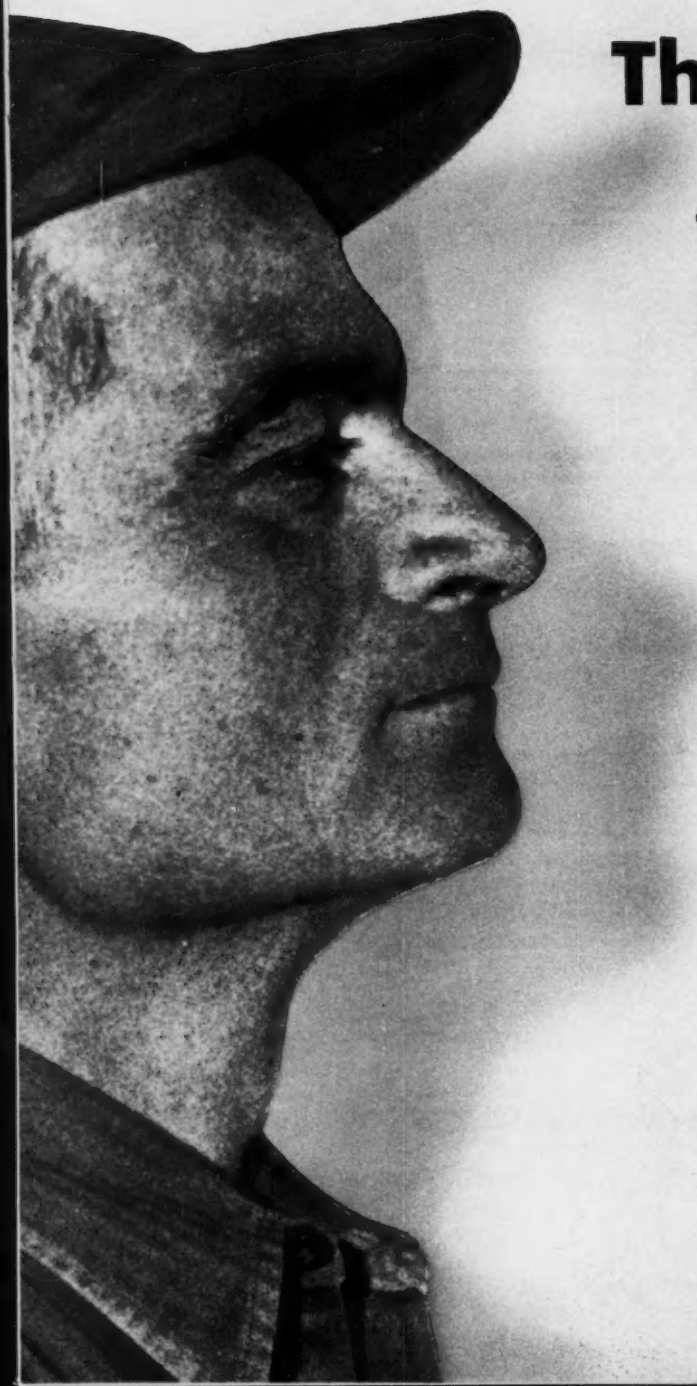
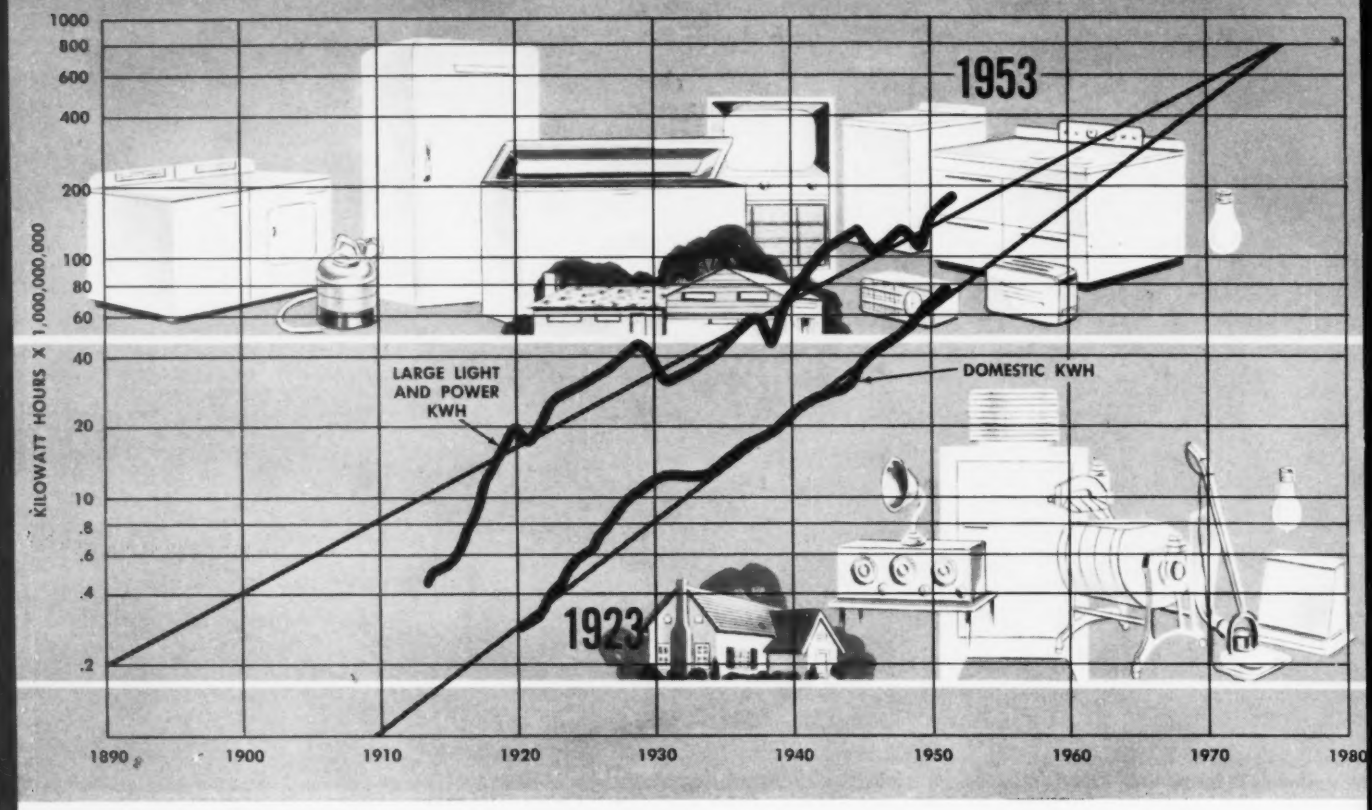


This Is the Face

the people of Hillman, Mich., see on their power company's

President
Plant Superintendent
Lineman
Serviceman
Meter Reader
Bill Collector
Road Builder

See Page 16



TREMENDOUS INCREASE in domestic kwh is graphically illustrated by comparison with also growing large light and power curve. Despite deviations, straight line growth-trend is evident.

Will your system be ready to meet tomorrow's greater domestic loads?

Semi-log charts indicate residential load may exceed industrial by 1973

Domestic power consumption, as interpreted by a semi-logarithmic plotting of EEI statistics, is increasing more rapidly than large light and power usage and may easily exceed it within the next twenty years. Semi-log curves permit a perspective of past history and a picture of the relation between magnitude and time interval, the basic considerations in future planning.

RATE OF GROWTH

From an over-all electric utility industry standpoint, load growth over the years may be considered substantially uniform. On individual systems this growth may not have been uniform system-wide, yet it is easily predicted.

The industry values are average values which means that some systems will have substantially higher load growths. Furthermore, these higher over-all system rates are themselves averages, which means specific areas will grow rapidly for a time. This fact is extremely important from a system planning viewpoint. These areas, or parts of a system, in which rapid growths occur tend to subordinate the present system. This may provide an excellent opportunity to build a new system with little retirement, obsolescence or hindrance from the old.

INTERPRETATION OF LOAD GROWTH

The lower load factor of the domestic load for the same kilowatt hours means a correspondingly greater peak for the domestic load. Since investment is closely related to peak load, these factors give special prominence to the domestic load from the future investment standpoint.

The challenge of continuing planned expansion programs and determination of most efficient system distribution voltages becomes increasingly important. General Electric Company, Schenectady 5, N. Y.

301-214

TREND TO LARGER TRANSFORMERS illustrated by average size of units shipped—16.9 kva now as compared with 8.3 kva in 1947—is pointed out to D. K. Blake, Mgr. Transmission & Distribution Engrg., by J. L. Elrod, Mgr. Marketing, Distribution Transformer Dept. Increase is partially due to new housing, below.

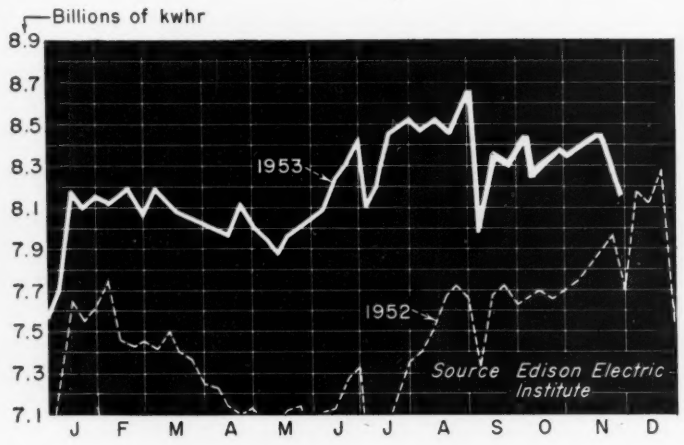
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 140, NO. 23

December 7, 1953

Electrical World



Output Week Ended Nov. 28—8,138,165,000 Kwhr

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Nov. 28	+5.7	+3.9	+2.7	−1.2	+4.5	+17.6	+1.7	+6.9	+21.6	+0.4
Nov. 21	+5.6	+1.6	+0.8	−1.7	+4.0	+17.4	+2.7	+8.5	+24.2	+5.4
Nov. 14	+7.3	+3.0	+3.4	+1.7	+5.7	+19.3	+2.3	+6.6	+21.9	+4.5

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Sept.	77.2	77.1	69.6
Capacity (Million Kw)	Sept.	87.59	86.63	78.76
Production (Billion Kwhr)	Sept.	37.04	38.50	33.38
Hydro	Sept.	7.59	8.45	7.36
Fuel	Sept.	29.45	30.04	26.02
Fuel Consumption				
Coal (Million Tons)	Sept.	9.70	9.70	8.84
Oil (Million Barrels)	Sept.	6.16	6.55	6.05
Gas (Billion Cu Ft)	Sept.	105.30	112.88	96.38
Sales (Billion Kwhr)	Sept.	32.64	32.82	30.11
Residential	Sept.	8.55	8.48	7.66
Commercial	Sept.	5.90	5.98	5.37
Industrial	Sept.	15.67	15.83	14.75
Other	Sept.	2.51	2.52	2.33
Net Income Class A & B Companies ($ Million)	Sept.	81.20*	77.43	74.14
Estimated Dec. '53 Peak (Million Kw)	Sept.	85.6	86.2	88.0
Kwhr per Residential Customer (12 Month Average)	Aug.	2,289	2,273	2,119
Revenue per Kwhr Residential Service (12 Month Average)	Aug.	2.76¢	2.76¢	2.77¢
Canadian Production (Billion Kwhr)	Sept.	5.09	5.09	4.99

Business Statistics

FRB Industrial Production Index†††	Oct.	236	236	233
Gross National Product Annual Rate ($ Billion)	3rd Qtr.	369.0	372.4	345.3
EW 5 Industry Production Index	Oct.	127.6	128.3	127.4
ENR Construction Cost Index††	Nov.	128.1	128.0	123.4
BLS Consumer's Price Index	Oct.	115.4	115.2	114.2
NEMA Insulation Materials Sales Index†	Sept.	153	153	142
NEMA Electric Appliance Sales Index†	Sept.	101	90	105
NEMA Household Refrig. Sales Index†	Sept.	62	63	69

*Preliminary **Revised †1947-49=100 ††1949=100 †††Unadjusted

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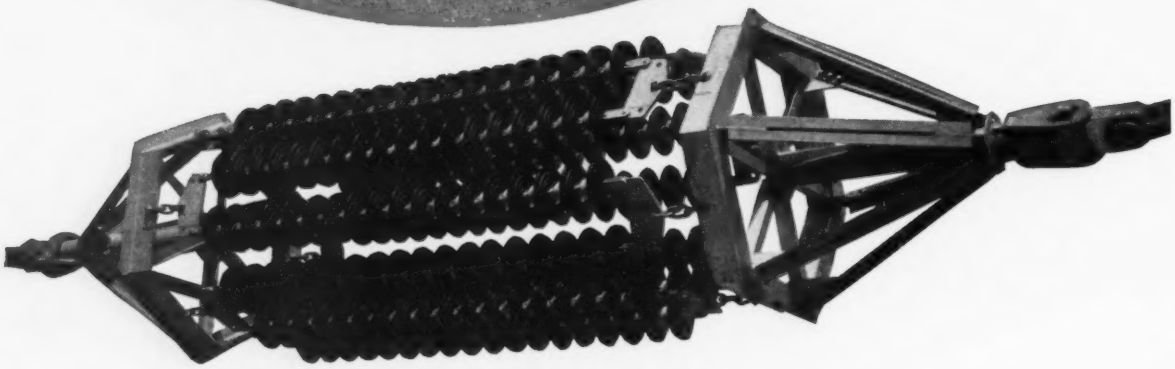
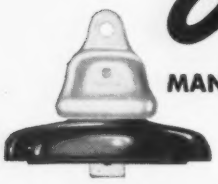


on World's Largest Span

Now, the longest unsupported conductor span in the world -- over two miles -- is carried on O-B suspension insulators. Twelve strings of 18 units each, yoked in a lever-acting, load-dividing assembly, apply a generous safety factor to a computed ultimate strain of 228,000 pounds.

Need we "gild the lily" by pointing to the necessity for dependability in such an application as this? Where nothing counted so much as reliable service, builders of this span put O-B insulators on the job.

Your lines may not impose such spectacular demands on insulation, but whether the need for extra performance is deliberately designed into the job, or may just accidently come along, it is best handled by making O-B YOUR CHOICE OF INSULATORS.



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THE ELECTRICAL WEEK

The Issue's News Highlights . . .
Interdependence of all branches of the electrical industry was emphasized at fourth annual Hawaiian Conference of Pacific Coast Electrical Association.

Speculation about who will be the new superintendent of Seattle City Light is centering around Dr Paul Raver, administrator of Bonneville Power Administration.

Five public power organizations, at the last minute, decided to boycott the Mid-Century Conference on Resources held in Washington last week.

Lewis K. Sillcox, honorary vice chairman of the board of New York Air Brake Co, was elected president of American Society of Mechanical Engineers for 1954 at the society's 74th annual meeting in New York. A report on ASME technical sessions will be published in next week's issue.

Holiday Notes . . . Turkeys burned out transformers in Seattle and Tacoma, Wash., and stopped an elevator in Detroit on Thanksgiving day. So many of them were being roasted in so many electric ovens that the Washington systems ran into difficulty . . . Those Detroit birds were blamed for blowing a fuse in a six-story apartment building, stranding two men and a woman between floors. Firemen got them—the people, not the turkeys—out of their predicament.

National Farmers Union has called an electrical consumers' conference in Denver Dec. 11-12 to "fight back" at what NFU describes as threatened increases in power rates to customers of federal projects. With APPA and NRECA representatives in attendance, the conference will be something of a successor to the one held in Washington in May 1952. Meeting call was issued by James G. Patton, NFU president; chairman will be Morris L. Cooke, first head of Rural Electrification Administration. Speakers include Senators Robert S. Kerr and William Langer; Clyde Ellis, NRECA executive manager; Leland Olds, former FPC chairman; and Leon Keyserling, who was chairman of President's Board of Economic Advisors under President Truman.

Spain has put the central, eastern and northern regions of the country on three five-hour work days a week because water reserves have dropped to 16% of capacity. No power will be available Sundays, and power will be supplied for household use after 6 p.m. only.

Public Utilities Advertising Association, which has switched to work-shop format for its meetings, will hold its 1955 convention in Chicago. The '54 convention will be held in Boston.

Tennessee Valley Authority announced it established a new peak for the hour ending 8 a.m. Nov. 9, when the system carried 4,401,000 kw. Previous record was 4,246,000 kw, set Oct. 28.

Off the Washington Wire . . . Atomic Energy Commission may step up efforts to draw private enterprise participation into its first utility-sized nuclear power plant project. This through a more formal offer than was made at the time the power plant was announced . . . AEC Chairman Strauss is reported to have told Gov. Frank J. Lausche of Ohio the plant site will be determined largely by availability and source of risk capital for generator and turbine portions from private industry.

Interior Department for the second time extended its interim contract for sale of Clark Hill Project power to Georgia Power Co. A decision on a permanent contract for the power sales is expected before Jan. 1.

Federal Power Commission announced a proposed 30% reduction in annual charges for hydro project licenses issued to states and municipalities. Reduction, to become effective Jan. 1, is made possible under a law enacted by the last session of Congress.

Possible alternative for a high Hells Canyon Dam was seen in revised reports to be submitted to Congress this month by Army Corps of Engineers. Reports are on the proposed Bruce's Eddy and Penny Cliffs projects on the Clearwater River, and Mountain Sheep on the Snake . . . The Corps also announced it favors construction of Libby Dam on the Kootenai River 15 miles upstream from Libby, Mont. Backwater, which would extend into Canada, has raised an international issue.

Sen Estes Kefauver (D-Tenn.) charged that REA and Bureau of the Budget have a "tacit agreement" to curtail the volume of loans to electric cooperatives. REA Administrator Ancher Nelsen denied any such agreement had been made.

Newport Electric Corp is offering 5,955 common shares to its holders on a 1-for-10 basis, record Nov. 27 to expire Dec. 14 at $31.50 a share to yield 6.98% . . . Utah P&L will pay Jan. 2 a quarterly common stock dividend of 50¢ a share as compared with 45¢ in previous quarter . . . Savannah F&P has received Georgia PSC approval to sell $3 million first mortgage bonds, 4% due 1983 and 7,000 shares of 5.36% preferred stock to institutions.

Ownership of Arvada Electric Co, serving 5,800 customers in northwest Denver suburbs, will pass Jan. 4, 1954, to Public Service Co of Colorado.

Sarasota, Holly Hill and Eau Gallie approved 30-year franchises with Florida P&L, bringing to 14 the number of Florida cities granting franchises to the company in 1953.

Executive Changes . . . Kansas G&E elected Vice Pres G. W. Evans president to succeed M. F. Gill, who remains as chairman of the board . . . Paul B. Wishart was elected president of Minneapolis-Honeywell Regulator Co succeeding Harold W. Sweatt, who became chairman of the board.

Mutuality in Electric Industry Stressed

PCEA meeting told various segments should work together to increase prosperity of all

Honolulu conference attracts a record attendance of 384 industry representatives

The interdependence of all branches of the electrical industry was given renewed emphasis in opening statements of officers of the Pacific Coast Electrical Association at the fourth Hawaiian Conference held at the Queen's Surf, Honolulu, Hawaii. The conference under the chairmanship of Harry P. Field, vice president, Hawaiian Electric Co, drew a record 384 industry representatives.

In the opening day general session, moderated by Paul A. Johnson, manager, Machinery and Electrical Department, American Factors, Ltd, the need for expanding industry markets was emphasized.

Mutuality of Interests . . . L. A. Hicks, president, Hawaiian Electric Co, pointed out the importance of the meeting in highlighting the needs of the electrical industry and the part of each representative in building a higher standard of living. Hicks described a cooperative range and water heater campaign resulting in sales of 2,615 units creating a demand of 1,576 kw. The merchandise and wiring cost was $727,000 while the utility facilities cost $630,000, he reported. This case, he said, serves as an illustration of the mutuality of interests among the segments of the industry involved in the transaction.

J. H. Pengilly, president of PCEA and vice president of Square D Co, emphasized the point that the interdependence of the industry made it fitting that the Pacific Coast Electrical Association was composed of all groups. He said, "Yesterday's adequate wiring promotion helped to pave the way for today's appliance sales that created the need for tomorrow's generating capacity." He expressed belief that the creation of more business rather than taking some away from the other fellow should be the individual objective of members. And summing up this point, Pengilly said, "Individually we can only prosper as our industry prospers."

C. W. Leihy, publisher of Electric Light and Power magazine, carried on the meeting theme by his comment that, "It's time each one of us stopped worrying about the share of business he is getting and time to worry about the share of the consumer's dollar that the entire industry takes." He pointed out that the automobile industry has skimmed the cream off the consumer dollar—that is 42% of the consumer durable goods dollar.

PCEA PRESIDENT J. H. Pengilly, Square D Co, addresses convention

Selling Stressed . . . "Five minutes after a baby is born he becomes a statistic and a potential customer" is the way John C. Sharp, president of Hotpoint Co, opened the subject of tomorrow's market for appliances. Sharp declared he had little respect for statistics on the business outlook. He said he looked more toward selling and faith in the future as the determining factors in the economic future.

Sharp called upon industry to "bring the salesman back to his rightful position and make him understand that salesmen brought this country up to where it is today."

Discussing the need for utility selling, Sharp cited two case studies. In the first four utilities had good cooperative programs but did not sell

CONFERENCE MODERATOR was Paul A. Johnson (left) of American Factors, Ltd. At right is Leslie A. Hicks, president of The Hawaiian Electric Co, Ltd, and a vice president of PCEA

REPRESENTATIVES of local electric companies at PCEA Hawaiian conference are (seated, l to r) R. R. Lyons, Maui Electric Co and chairman of PCEA's Administrative Service Section; and William Mackenzie, Hilo Electric Light Co. Standing are George Will,Molokai Electric Co; Lloyd Osborne, Kona Light & Power Co; and Colin Murdock, Maui Electric Co

themselves. In a campaign they sold 40 ranges and water heaters per 1,000 meters. Four other utilities which had their own sales program sold 85 units per 1,000 meters. In the latter case the dealers sold 67 units or 67% more than in the first one.

Nuclear Power . . . Francis K. McCune, general manager, Atomic Products Division, General Electric Co, told the group that "our technological advances have reached the point where private industry should be allowed much wider participation in the field of nuclear energy." He said he believed that within a few years a competitive nuclear power plant can be designed and built. He suggested Hawaii would be a good location because of its relatively high fuel costs.

The failure of utility commissions to recognize the effect of the depreciation of the dollar was criticized by Jesse H. Kopp, Public Utility Commissioner, Territory of Hawaii.

Dave M. DeBord, vice president, Stone & Webster, discussed the factors that led to the nationalization of the power industry in Great Britain. Two important situations causing trouble, he said, were governmental restrictions and competition resulting in different voltages and frequencies between systems. Instead of encouraging system expansion, British utilities could not add capacity without governmental action, he said.

Selling needs research, better ways of selling, promoting and using products need to be found, according to Walter J. Maytham, Pacific Coast district manager, Westinghouse Electric Corp. In discussing the value of industry's research programs of all kinds, Maytham pointed out that the problem in the field of selling grows out of an increase of only 10% in salesmen since 1940 against an 80% increase in volume of goods sold.

Business Statistics . . . In presenting latest business statistics, Fischer Black, editor of Electrical World, stated that the predicted decline of 5% to 10% in general business over the next two years would have only a minor effect on electric utilities. For the country as a whole, utilities predict a growth in the next two years of 21% in peak loads and 26% in capacity, the EW editor reported. He said the respective comparison for the PCEA area is 18% peak load growth and 17% in capacity.

Engineering and Operations Section . . . Problems experienced in chemical brush control received special attention in the engineering and operations section meeting under the chairmanship of Lewis W. Lengnick, vice president, Hawaiian Electric Co. Much of the progress made in the field of chemical brush control was credited to the Hawaii Weed Conference. This is an organization which brings together individuals interested in this field to pool information and carry out tests on various means of weed control. It has proven highly successful to date.

Administrative Services Section . . . Problems of the small Hawaiian utilities were discussed at a meeting under the chairmanship of P. R. Lyons, vice president and manager, Maui Electric Co. These utilities are faced with the same problems as their bigger brothers, it was pointed out. Such matters as adequate earnings to support financing, acquiring rights-of-way, simplified accounting and billing methods, and personnel relations were discussed by representatives from Kona Light & Power Co, Molokai Electric Co, Maui Electric Co, and Hilo Electric Light Co.

Business Development Section . . . George A. Riker, chairman, Electrical Living Committee of PCEA, reported on the activities of his group. For their 1954 program they are following the industry promotional campaign schedule and have set up subcommittees to plan a program for each period.

Outstanding progress in selling the all-electric home in Hawaii was reported by David M. Moncrief, Jr, assistant commercial manager, Hawaiian Electric Co. The company's records show that 80 to 90% of new homes are completely electric. The only major problem arises from the low wattage of the heating units in standard heaters, he said. Experience in Hawaii indicates that 4 kw is required to gain the recovery rate (20 gallons per hour) needed by customers with automatic clothes washers and dishwashers. Moncrief reported that the distributors are cooperating 100% in supplying water heaters with adequate wattage. He called upon the industry to include the higher wattage elements in their standards.

Leonard A. Hobbs, vice president, Smoot-Holman Co, made a plea on behalf of the consumer for quality lighting materials. He pointed out that today expenditures for lighting fixtures in a new home are only a fraction of those of a few decades ago.

Raver to Seattle City Light?

Rumor spreads that Bonneville Power administrator may succeed retiring E. R. Hoffman as superintendent

Speculation as to the new superintendent at Seattle City Light is centering around Dr Paul J. Raver, Bonneville Power administrator, who paid a visit recently to Seattle's Mayor Allan Pomeroy. Rumors that Raver would get the job have been rife since publication of a column by Drew Pearson, stating that Interior Secretary Douglas McKay has given Raver a few more weeks to find a new job.

Seattle Mayor Pomeroy said that his talk with Raver had "no particular significance;" that Raver simply happened to be in Seattle on his way home to Portland, Ore., from Wenatchee, Wash. "I have several other people I want to talk to before I make up my mind about this important matter," Pomeroy said.

Difference of Opinion . . . However, members of the Seattle City Council are convinced they will be called upon to confirm the Raver appointment. David Levine, president of the council, was in conference with the mayor and Raver. Councilmen agreed the appointment "would be a good one" and predicted confirmation by a unanimous vote.

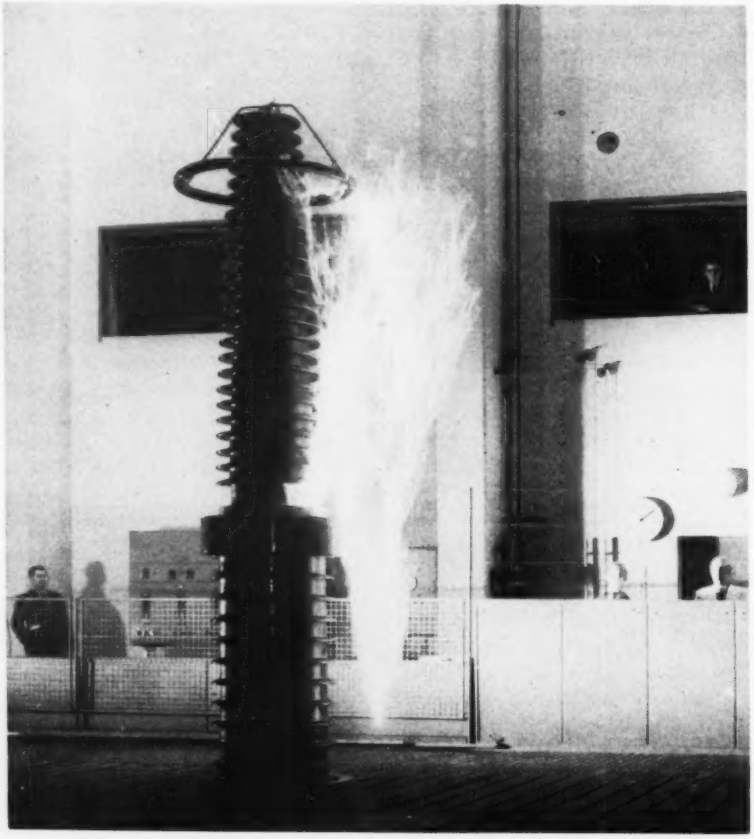
E. R. Hoffman, City Light superintendent since 1939, has announced his retirement from the $15,000 a year post, effective Jan. 1. Raver has been Bonneville administrator for the same length of time and talk has spread that he might be replaced since the change in national administration.

The Raver appointment, if made, might be opposed by the Joint Crafts Council, AFL, representing City Light employees, which has expressed the hope the appointment will go to a man already in the department. The council favors John M. Nelson, and P. C. Spowart, assistant superintendents. Outsiders being mentioned for the post include Frank Ward, superintendent of Tacoma City Light, and John D. Davis, BPA's assistant administrator.

Spotlight Turned . . . In his special dispatch to Pacific Northwest subscribers, Pearson trained the spotlight on Raver by stating: "Though he had hoped Secretary McKay would let him stay in government another year and a half, when he will reach retirement age, McKay has sent word to Raver that the GOP pressure is too great. Specifically, Chairman Len Hall of the Republican National Committee has served an ultimatum on the Secretary of Interior that he has to put a Republican in Raver's place."

In reply to the column Raver said: "I know nothing of the statement that Secretary McKay has 'given me a few more weeks to find a job.' Neither have I been told of any action by Chairman Len Hall relative to the Bonneville Power Administration."

Reached for comment by the Portland Oregonian, Secretary McKay said: "My relation with Dr Raver has been most cordial and he has been very cooperative in working out several major problems confronting the BPA. At the time I became secretary, Dr Raver and I had an understanding that he would continue to act as administrator until some of these problems were worked out, at which time he might accept some of the other proposals that had been made him. If he should now decide to accept another position, it is only in conformity with our mutual understanding."



High Voltage Test at German Institute

Plumed shaped sparks are emitted as 850,000 v are applied to an insulator for a 400,000-v power land-line being tested at the newly opened High Voltage Institute of the Allgemeine Elektrizitaetswerke (AEG) at Kassel, Germany. The $1,428,000 institute, said to be the largest of its kind in Europe, reports this test showed a 100% safety margin for the insulator, which is 11½ ft high.

Parley Boycotted

Five pro-public power groups withdraw from Mid-Century Conference on Resources

Mid-Century Conference on Resources for the future went ahead in Washington last week minus five pro-public power organizations which withdrew support just prior to opening day.

The five, headed by National Rural Electric Cooperative Association, charged that the meetings would be dominated by the "corporate viewpoint." In a joint press release, they said they could not get representation on committees dealing with energy, land and water resources.

The conference was slated to bring together more than 1,200 individuals representing scores of organizations which have a stake in resource development. One section of the conference was to concentrate on energy resource problems at which the public-vs-private power development controversy was almost certain to arise.

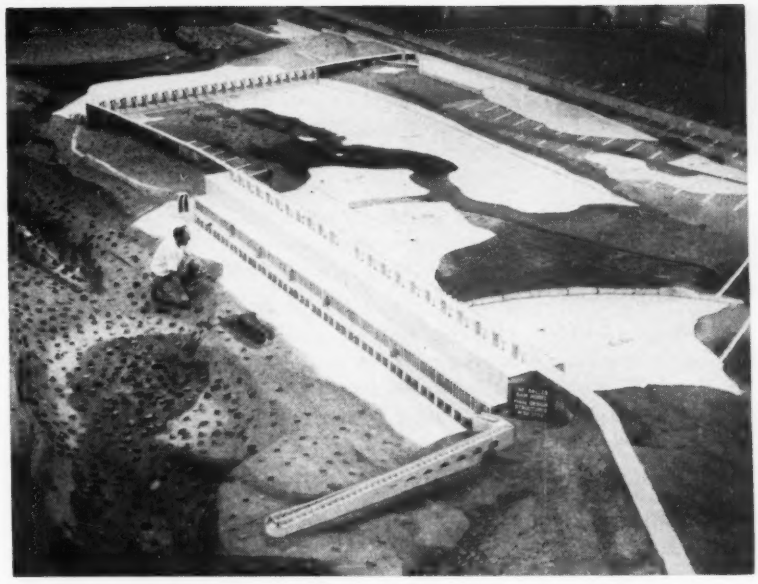
Three Were Sponsors . . . Organizations which pulled out of the conference were NRECA, National Farmers Union, Cooperative League of the U.S.A., the Public Affairs Institute, and the Regional Committee for a Missouri Valley Authority. First three of these groups were represented on the Council of Sponsors of the conference. NRECA had been the only electric power organization which had participated in calling the conference when it was first scheduled for March of this year. It was postponed in order to draw wider sponsorship and gain wider support from the federal government.

Four of the organizations withdrawing from the conference participated in the Electric Consumers Conference held in Washington in late May of last year. The other, the Regional Committee for a Missouri Valley Authority, is not widely known in Washington.

Electric Consumers Conference called for public development of all hydroelectric resources and said that outstanding federal licenses for such development should be "cancelled and recaptured as rapidly as possible." ECC further called for a thorough investigation of the private power industry.

The four groups are members of the Electric Consumers Information Committee which was set up to continue the coordinating work of ECC.

APPA Participates . . . Not all pro-public power organizations chose to pull out of the Mid-Century Conference. American Public Power Association, representing some 700 local public power systems, participated through S. R. Finley who is a member of both APPA and Tennessee Valley Public Power Association. Finley was a member of the steering committee of the energy resource problems section of the Mid-Century Conference.



'Dry Bed' View of Dalles Dam Model

Final design structure of a model of The Dalles Dam is being inspected by a model operator. This "dry bed" view of the Columbia River project shows the general configuration of the river bed.

Army Corps Conducts Hearing on Idaho Dams

Idaho approves Corps of Engineers plans for dams in northcentral Idaho but wants assurance of some electric power. These were the statements of two state officials last week, following an engineers' hearing on Clearwater and Snake River dams last week at Orofino.

Gov Len Jordan said, in an interview, that he "approves in principle" the plans for two dams on the Clearwater and one on the middle Snake River. If further study bears out the engineers' claims at Orofino, Jordan said his state "will actively support the three proposed dams"—Penny Cliffs, Bruce's Eddy and Mountain Sheep.

Jordan declared he believes the two Clearwater dams, Penny Cliffs and Bruce's Eddy, should win priority over other projects for which no funds have been appropriated.

Meanwhile, Mark Kulp, Idaho state reclamation engineer, asked that "there should be an allocation of some energy to Idaho, which would be made available when it can be used inside the state." Kulp revealed that he expressed the state's hope for an allocation of power directly to Col Fremont S. Tandy, Walla Walla district engineer who conducted the Orofino hearing.

Kulp disclosed three other demands he had made: "All appropriation of water should be made under Idaho state law; funds should be appropriated to recompense property owners for property taken or damaged by the projects; and there should be recompense to governmental agencies for loss of a tax base resulting from dams."

IN THE INDUSTRY

The electrical industry has rounded up some of the best-known names in the business world to give prestige and counsel to Light's Diamond Jubilee, the year-long fete that in 1954 will mark the 75th anniversary of Thomas Edison's first successful incandescent lamp.

This became known today as Charles E. Wilson, chairman of the sponsoring committee, announced a list of 35 members that included names such as Hoover, Ford, Firestone and Edison.

According to Edison Electric Institute and Light's Diamond Jubilee Committee, organizers of the celebration, the group will be called on from time for advice on the staging of major events. The committee reads like a roster of modern industrial leadership:

National Figures . . . Herbert Hoover, former President of the United States; Charles Edison, son of the inventor and former Governor of New Jersey; Henry Ford II, grandson of the motor magnate; and Harvey S. Firestone Jr, son of Edison's long-time friend.

Association Presidents and Chairmen . . . D. B. Clayton, National Electrical Contractors Association; J. H. Jewell, National Electrical Manufacturers Association; Walter H. Sammis, EEI; J. R. Whiting, retiring president, Association of Edison Illuminating Companies.

Manufacturing Executives . . . Ralph J. Cordiner, General Electric Co; Cleo F. Craig, American Telephone & Telegraph Co; Walter P. Marshall, Western Union Telegraph Co; Don G. Mitchell, Sylvania Electric Products, Inc; William S. Paley, Columbia Broadcasting System; Gwilym A. Price, Westinghouse Electric Corp; W. A. Roberts, Allis-Chalmers Manufacturing Co; David Sarnoff, Radio Corp of America; Thomas J. Watson, International Business Machines.

Power Company Executives . . . J. B. Black, Pacific Gas & Electric Co; George H. Blake, Public Service Electric & Gas Co; Prentiss M. Brown, Detroit Edison Co; Edgar H. Dixon, Middle South Utilities, Inc; Bayard L. England, Atlantic City Electric Co; Willis Gale, Commonwealth Edison Co; Elmer L. Lindseth Cleveland Electric Illuminating Co; H. P. Liversidge, Philadelphia Electric Co; J. Wesley McAfee, Union Electric Co of Missouri; Clifford B. McManus, Southern Co; I. L. Moore, New England Electric System; W. C. Mullendore, Southern California Edison Co; H. R. Searing, Consolidated Edison Co of New York; Philip Sporn, American Gas & Electric Service Corp; Frank M. Tait, Dayton Power & Light Co; E. S. Thompson, West Penn Electric Co.

Advertising and Public Relations Leaders . . . C. P. Crane, Electric Companies Advertising Program; R. E. Ginna, Electric Companies Public Information Program.

Wilson, former president of GE and head of the Office of Defense Mobilization, said community celebrations of the Jubilee already are being planned by electrical manufacturers and utilities in 600 municipalities throughout the country, and the number is expected to rise to 700 in the next few months.

One major event on which the organizing committee will want its sponsors' advice is the much-talked about Jubilee television show. Various groups want to stage a production on the scale of last year's Ford anniversary show on Oct. 21, 1954, actual anniversary date of Edison's invention. An important question is financial backing—the organization committee doesn't intend to sponsor the show at the expense of any other part of its program. The matter is being worked over, and Jubilee directors expect to have an answer on it within a few weeks.

Across the nation, other plans for celebration are beginning to crystallize. Atlantic City (and Atlantic City Electric) will tie in its Centennial Celebration with the Jubilee just about the time EEI is having its annual convention there next June.

Florida Power & Light would like to tee off Jubilee year by including their celebration with New Year's Day Orange Bowl festivities in Miami. And in Fort Myers, Fla., Jubilee festivities will be tied in with the city's annual Edison Pageant of Light, to be held this year Feb. 10 to 14.

Other tie-ins have been arranged: Montana Power Co's celebration with the 75th anniversary of the City of Butte; Central Vermont Public Service's with its own 25th birthday.

Edison Electric Institute alone has contributed $300,000 to the Jubilee's success; when all returns are in, "Light" next year may be going to a million-dollar ball.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Boiler furnaces produce 12 to 15 pounds of gas per pound of coal burned or, say, 1.35 pounds of combustion gas per pound of steam generated.

Gas cylinder valve was knocked off when handled carelessly by a workman who saw it take off like a misguided missile, plow through a vacant auto, leap-frog two homes and, gas now spent, stop at a third house.

Water can be pressed from peat (5 to 9 pounds per pound of peat) by kneading in dry dust to provide channels of escape for the water. The remaining 4 pounds can be evaporated by turbine exhaust.

Fuels of high-ash and high-moisture contents are "low grade" only if they are unsuited to the combustion apparatus or vice versa.

One pound of aluminum can be spread in a film covering 25,000 square feet by means of a new vacuum metallizing process.

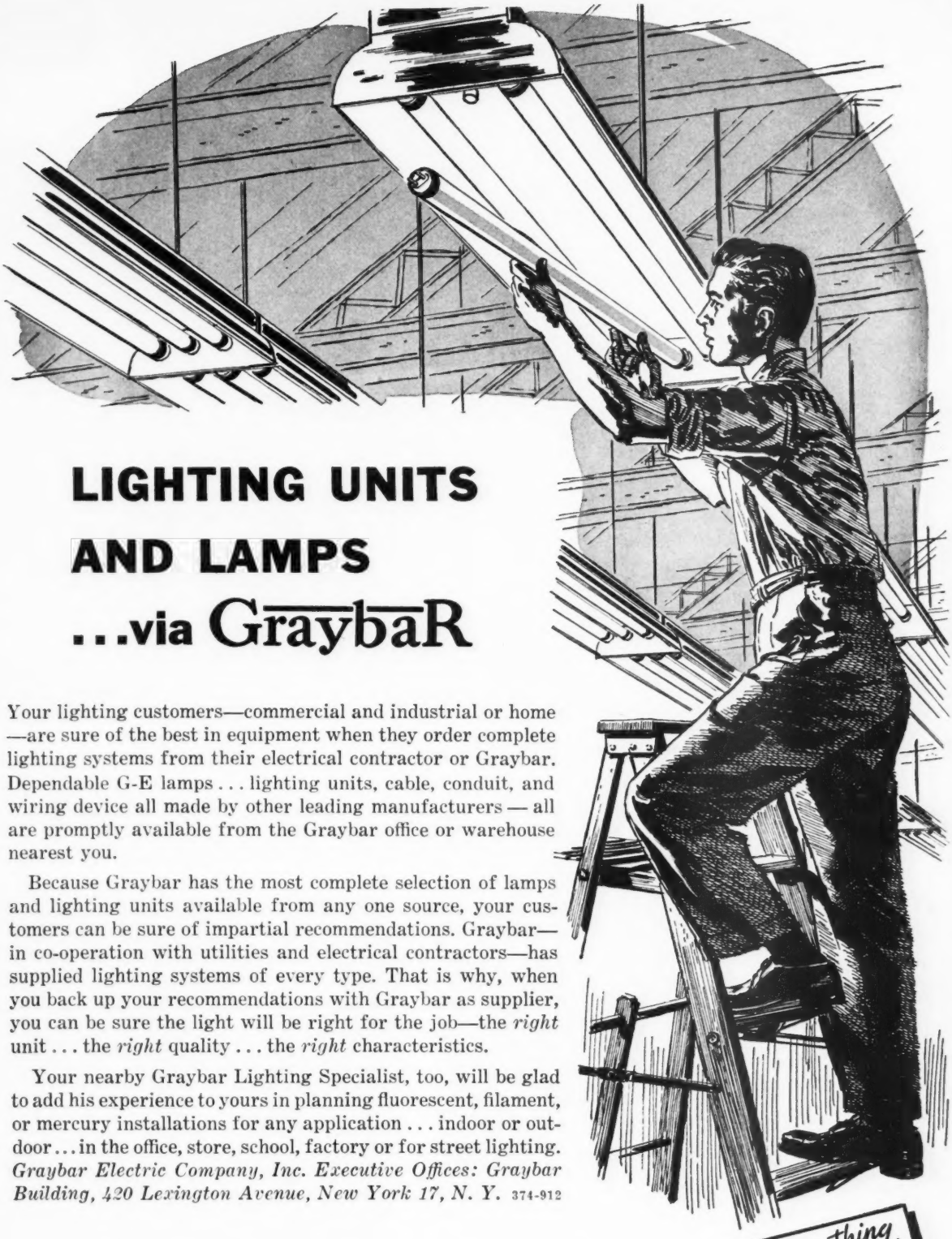
Line work on 12 kv is reportedly accomplished as fast with live-line tools as with rubber gloves, then what's wrong with doing 4 kv work with the tools?

Stoker room air pressure should be lower than that of a new adjoining pulverized combustion section and turbine room if the atmospheres in the latter are to be kept clean.

Higher ground resistance is allowable for a large station on a system with small fault current than for a small station on a system with large fault current.

Petroleum is the base for 40% of the organic chemicals produced annually in the U. S.

Increase in temperature of a thermal neutral reactor automatically causes a decrease in reactivity. The British Bepo reactor operates at 4.05 Mw and 152 C with full coolant flow. If coolant fails temperature rises to 204 C (400 F), reactivity decreases and nuclear power collapses.



LIGHTING UNITS AND LAMPS ...via GraybaR

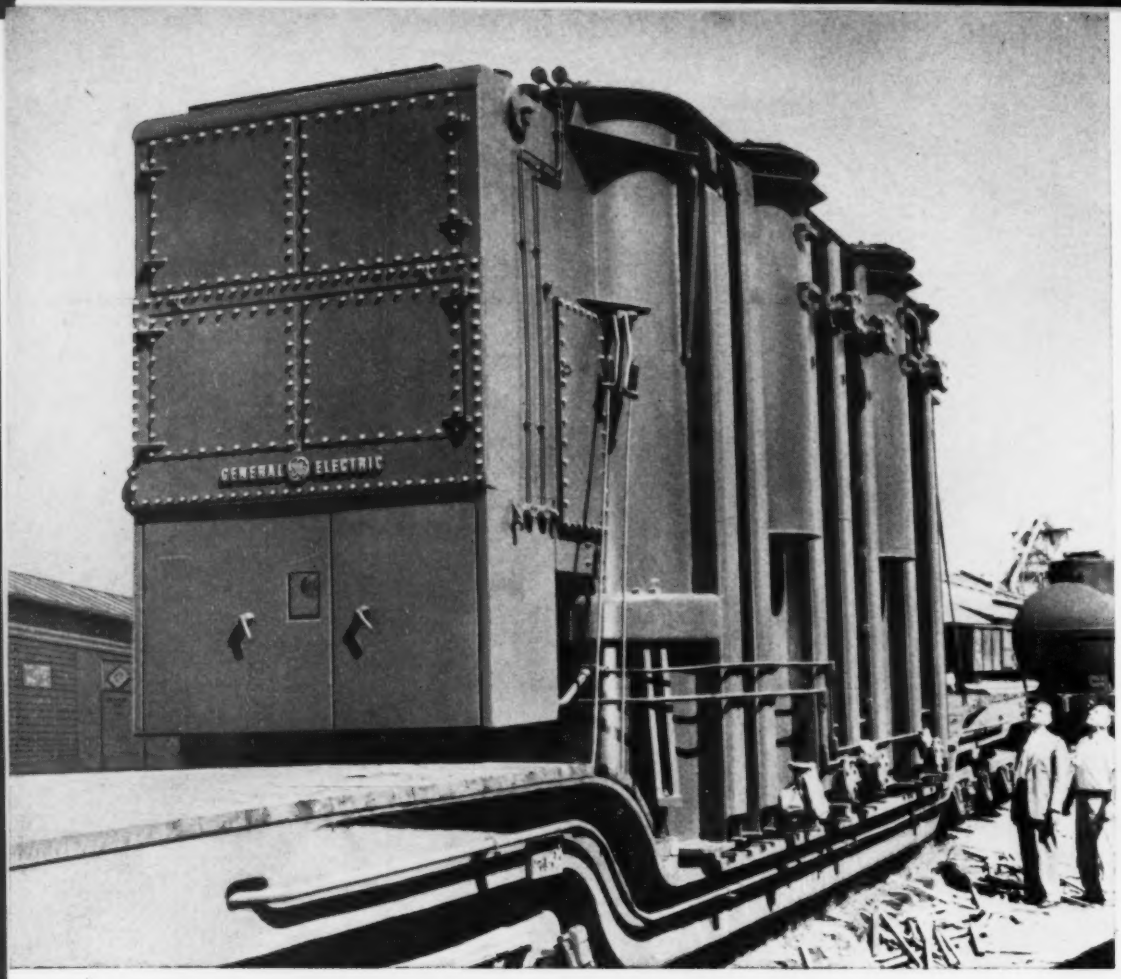
Your lighting customers—commercial and industrial or home—are sure of the best in equipment when they order complete lighting systems from their electrical contractor or Graybar. Dependable G-E lamps . . . lighting units, cable, conduit, and wiring device all made by other leading manufacturers — all are promptly available from the Graybar office or warehouse nearest you.

Because Graybar has the most complete selection of lamps and lighting units available from any one source, your customers can be sure of impartial recommendations. Graybar—in co-operation with utilities and electrical contractors—has supplied lighting systems of every type. That is why, when you back up your recommendations with Graybar as supplier, you can be sure the light will be right for the job—the *right* unit . . . the *right* quality . . . the *right* characteristics.

Your nearby Graybar Lighting Specialist, too, will be glad to add his experience to yours in planning fluorescent, filament, or mercury installations for any application . . . indoor or outdoor . . . in the office, store, school, factory or for street lighting. *Graybar Electric Company, Inc. Executive Offices: Graybar Building, 420 Lexington Avenue, New York 17, N. Y.* 374-912

Call Graybar first for...

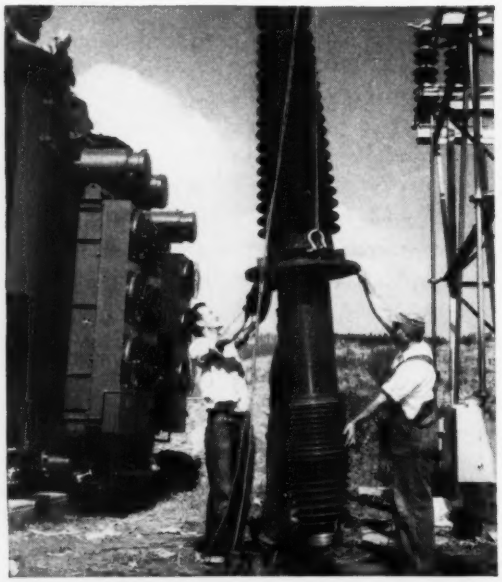
*GraybaR Everything Electrical *GraybaR ELECTRIC COMPANY
SINCE 1869 *REG. U.S. PAT. OFF.
IN OVER 100 PRINCIPAL CITIES



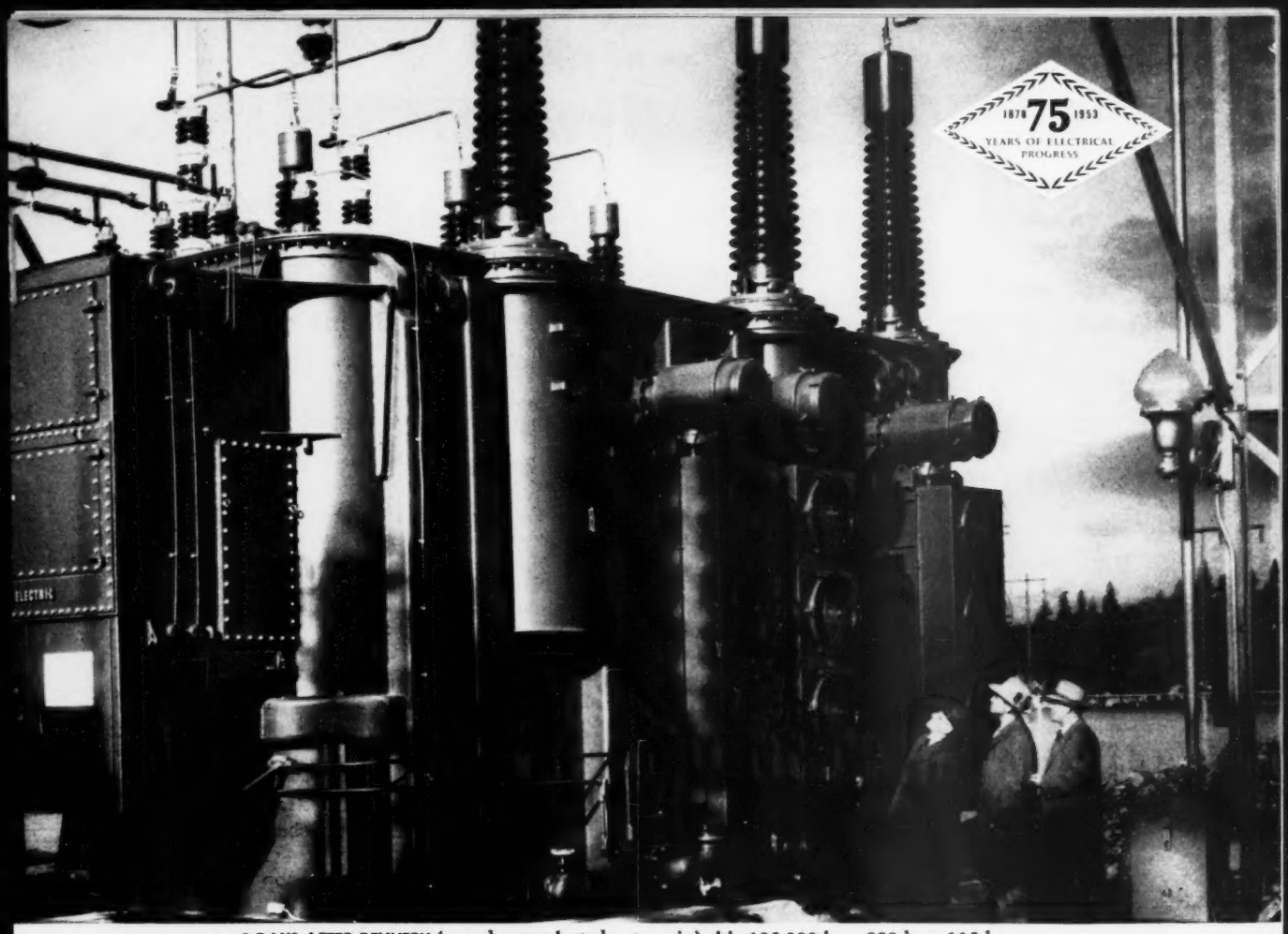
Upright shipment in one-piece tank means you can . . .

INSTALL G-E "CONCENTRIC LAYER"

TRUCK SERVES AS WINCH to transfer the unit from railroad car to trailer for the 2-mile trip to the foundation. Large cranes were eliminated, thus saving time and money.



BUSHINGS WERE INSTALLED just two days after unit was placed on foundation. One-piece tank construction contributed to speed of installation.



8 DAYS AFTER DELIVERY (one day was lost due to rain) this 125,000-kva, 220-kv—115-kv—13.2-kv autotransformer was ready to energize. Unit is cooled by directed flow of forced oil.

TRANSFORMERS FASTER . . . AT LESS COST

Washington Water Power energizes 125,000-kva G-E unit 8 days after delivery

Recently installed at the Beacon Substation of the Washington Water Power Company of Spokane, Washington, this General Electric autotransformer joins a 220-kv line, from the company's new Cabinet Gorge generating station, to an existing 115-kv system. This transformer, one of the largest autotransformers ever installed in the Pacific Northwest, is equipped with plus and minus 5% load-ratio-control. A second identical unit is now being installed and the two units will carry the entire output of Cabinet Gorge.

Reduced weight and dimensions resulting from the use of G-E "concentric layer" high-voltage windings permitted the autotransformer and the load-ratio-control series transformer to be fitted into a one-piece tank and shipped in an upright position.

In addition to their inherent compactness, "concentric layer" windings provide:

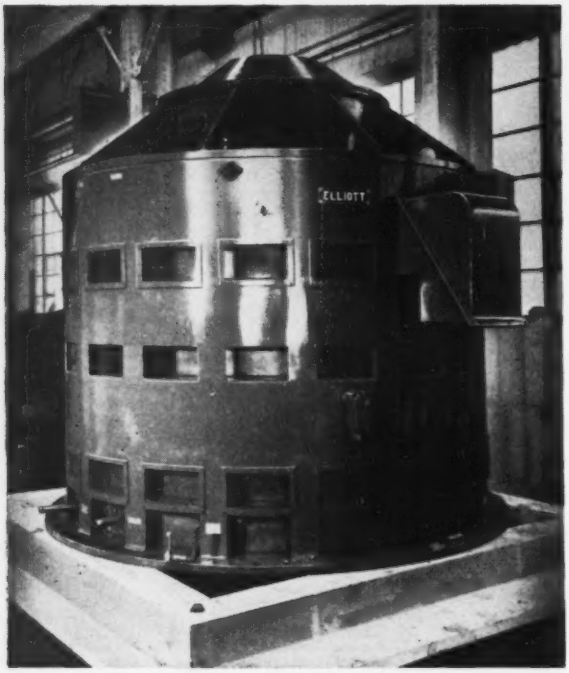
- High impulse strength due to uniform distribution of impulse voltages and the elimination of harmful oscillations.
- Effective inter-layer cooling—vertical ducts between layers permit unrestricted oil flow past each conductor.
- Greater mechanical strength because major magnetic forces are radial and well within the tensile strength of the conductor.

If you contemplate systems 161 kv or above in high-capacity ratings, it will pay you to review the data on "concentric layer" transformer design. Ask your G-E Apparatus Sales Representative for Bulletin GER-129, or write to Section 421-1, General Electric Company, Schenectady 5, New York.

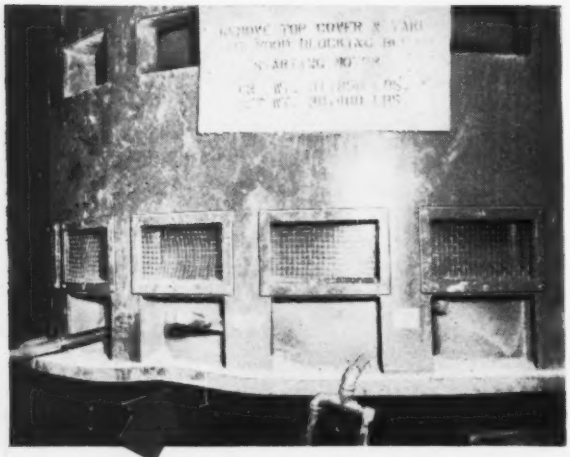
You can put your confidence in—

GENERAL ELECTRIC

What happened when a 15-ton motor dropped 25 feet!



The motor, good as new, after required repairs and repainting.



The bend in the base ring—the only damage to the frame, which upon disassembly checked absolutely true on the boring mill.

Construction accident conclusively proves the enduring rigidity of ELLIOTT Fabri-Steel motor construction.

It hit with a smack that shook everything for a hundred yards around, when the crane accidentally let go of this big Elliott 2000-hp, 8-pole vertical induction motor while the motor was 25 feet in the air, during installation at a southwestern utility plant. Customer's engineers, witnessing the accident, assumed 100 per cent loss of the motor.

Not so with an Elliott motor with its all-welded steel frame and stator. For here's all that happened to it:

No damage to internal parts of stator or rotor.

Base ring bent between two ribs — easily corrected (see photo).

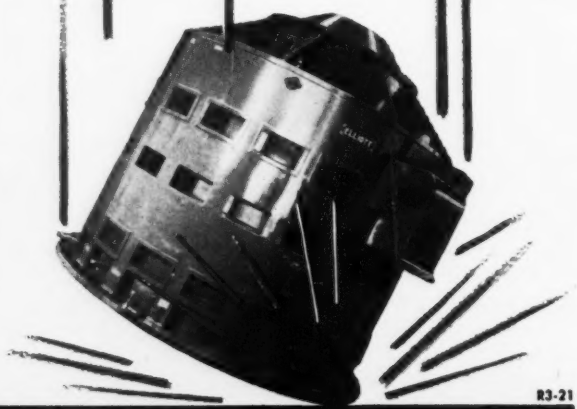
Shaft bent .0034 in. — readily straightened.

Rotor driven up into motor, but stopped by heavy bracket.

Lower oil pot, one baffle, and top cover only needed replacement.

Minor damage to Kingsbury thrust bearing and upper guide shoes. No damage to bottom guide bearing.

And that's all. A demonstration of shock-resistance that would do honor to an army tank. If you want real stiffness in a motor, check on Elliott Fabri-Steel construction — see your local Elliott engineer or write Elliott Company, Ridgway, Pa.



R3-21

Elliott FABRI-STEEL MOTORS AND GENERATORS

ELLIOTT Company RIDGWAY DIVISION

FOR MOTORS 1-200 HP. CROCKER WHEELER DIV. AMPERE, N. J.

W. A. Blees, Avco Manufacturing; E. C. Easter, Alabama Power; C. M. Wallace, Georgia Power; J. M. Stedman, Pennsylvania Power & Light

C. L. Osterberger, Louisiana Power & Light Co; E. N. Pope, Carolina Power & Light Co; and Edward R. Dunning, N. W. Ayer & Son

Utilities Urged to Accelerate Selling

Heat pumps, rates, home lighting, community developments, public relations get attention at SEE Sales Conference

Nationwide residential service is averaging only about 3½% return on utility investment in it, declared Edwin C. Vennard, Middle West Service Co, at the general sales conference of the Southeastern Electric Exchange in Atlanta, Nov. 19-21.

The Middle West Service president said residential rate schedules generally are not designed for loads of present and future magnitudes and will have to be revised to include increase in the cost-to-serve element. They must be made, in fact, demand rates, which give due recognition to customers' load factors, Vennard said. And, despite opinion to the contrary, demand rates for residential service can be sold if properly designed, he said.

Utilities' Responsibility . . . Major responsibility for the development of the heat pump business is now on the electric utilities. They have the power of life or death over this potential giant. So spoke H. M. Brundage, General Electric Co's heat pump head man. He said manufacturers have done, are doing, and will do their part to supply a product that will benefit customers, utilities, and themselves. The heat pump now needs active, energetic and vital stimulation which it can get only from the utilities, Brundage declared.

Earlier in the meeting, Guy C. Hall, Florida Power Corp, presented a paper on "Service Problems of the Heat Pump" which pointed up the utility responsibility stressed by Brundage. Heat pump users, said Hall, have had instilled in their minds that they must expect troubles of one kind and another with such a new kind of machine. He noted that this has resulted in a lot of "nuisance" service calls that can in no way be classed as caused by actual mechanical difficulties.

Good Will Important . . . Setting the tone for the conference, C. M. Wallace, Georgia Power Co, said, "Our service must be adequate, dependable, and at reasonable rates. But unless our customers like us, we can find ourselves out of business almost overnight. We must strive to sell electric service in terms customers can understand, not as kilowatts and kilowatthours, but as benefits in food preparation, entertainment, better living and profit in all its forms."

Customers, communities, companies and country are the "high C's" of utility selling, according to J. M. Stedman, Pennsylvania Power & Light Co, in his address to the conference. Utilities should analyze their markets, he said, learning the economic status of their customers, the distribution of them among age groups, local interests, all the conditions that fix living and working habits. He added that they also should study their communities and take the lead in improving them and making them more prosperous. Utilities must think also of their own good, how to increase compensatory revenues by selective selling. And finally, said Stedman, utilities must work for our country, work for the perpetuation of our American way of life against socialistic ideas.

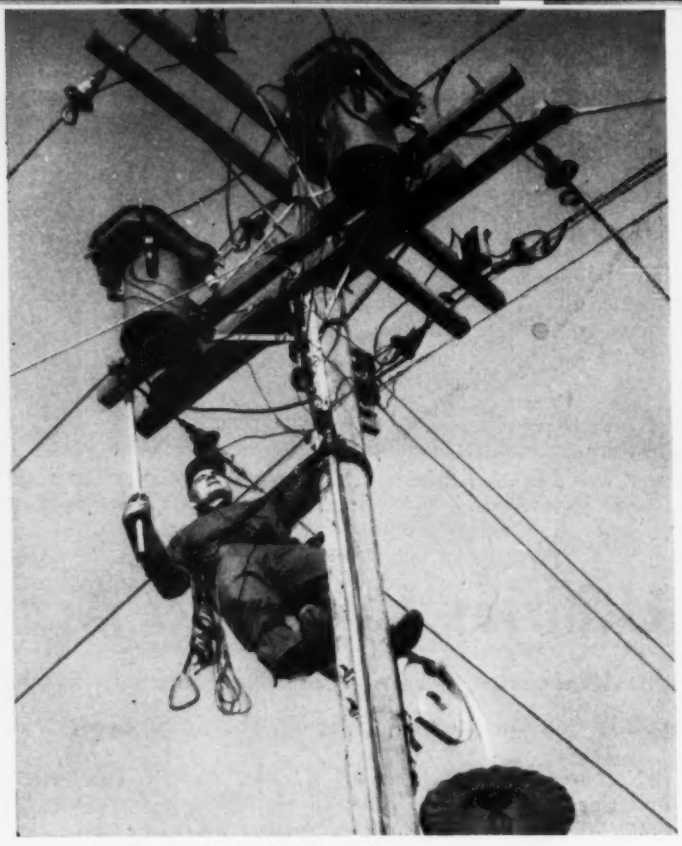
'Finer Carolina' . . . E. N. Pope, Carolina Power & Light Co, described and gave results from the program, "Helping to Build a Finer Carolina," which was inaugurated by his company in March, 1952. Prizes amounting to $8,750 were offered to communities accomplishing most in various ways of improvement. Date set for entering the competition was April 1 and, although the time was very short, Pope said 148 towns and villages were enrolled and had begun work on 887 projects, including improvements of sidewalks and streets, expanding municipal facilities, betterments to educational institutions, churches, etc.

Pope reported that of the 148 towns enrolled, more than 100 completed their projects and submitted entries in the competition. He said the public relations benefit to the company was indicated by the nearly 20,000 column-inches of favorable publicity in local newspapers and the total of 5,320 individuals, leading spirits in their communities, with whom intimate contact was established. The program was carried on in 1953 and will be continued in 1954.

Home Lighting . . . Home lighting received its share of attention at the

(*Continued on page* 18)

THE FACE ON MANY JOBS



. . . is that of Earl Elowsky . . .

There was the day in 1928 when the hydro plant burned down. And the day in 1937 when the dam washed out. But for the most part, it's a happily routine job for Earl Elowsky, the one-man utility company of Hillman, Mich.

Earl's father bought the Hillman Light, Power & Water Co in 1913, when it was a year old and Earl was 16. He passed it on to Earl before he died some years ago, and the younger Elowsky has been "management" ever since.

He tends the generators and repairs the lines and reads the meters and bills the customers. "I handle just about everything but the complaints," he says. "My wife tends to that."

Elowsky and his wife and four children live in a house in Hillman that serves both as a home and a utility headquarters. He thinks maybe the younger of his two sons, now a freshman in college, will carry on the company when he retires.

The utility he would inherit now has 250 meters and generating capacity of 300 kva, half of it hydro, the rest diesel. The hydro plant harnesses the water of the Thunder Bay River. Its two belt-driven generators run themselves while Elowsky goes to work at a score of other jobs.

As everywhere else, demand for power is up, and Hillman LP&W has to keep pace.

"We're putting in a new hydro unit now," Elowsky says, happily. "270 Kva."

Hillman's dam, while not large, backs the river up a considerable distance. This serves a dual purpose, Elowsky says. "When the water level is up, I can land my plane in the backwater." He explained he likes to go hunting and fishing in Canada, and his small amphibian is fine for that sort of thing.

Times like that he turns operation of the power plant and the water works—which he also owns—over to his one full-time employee, an electrician.

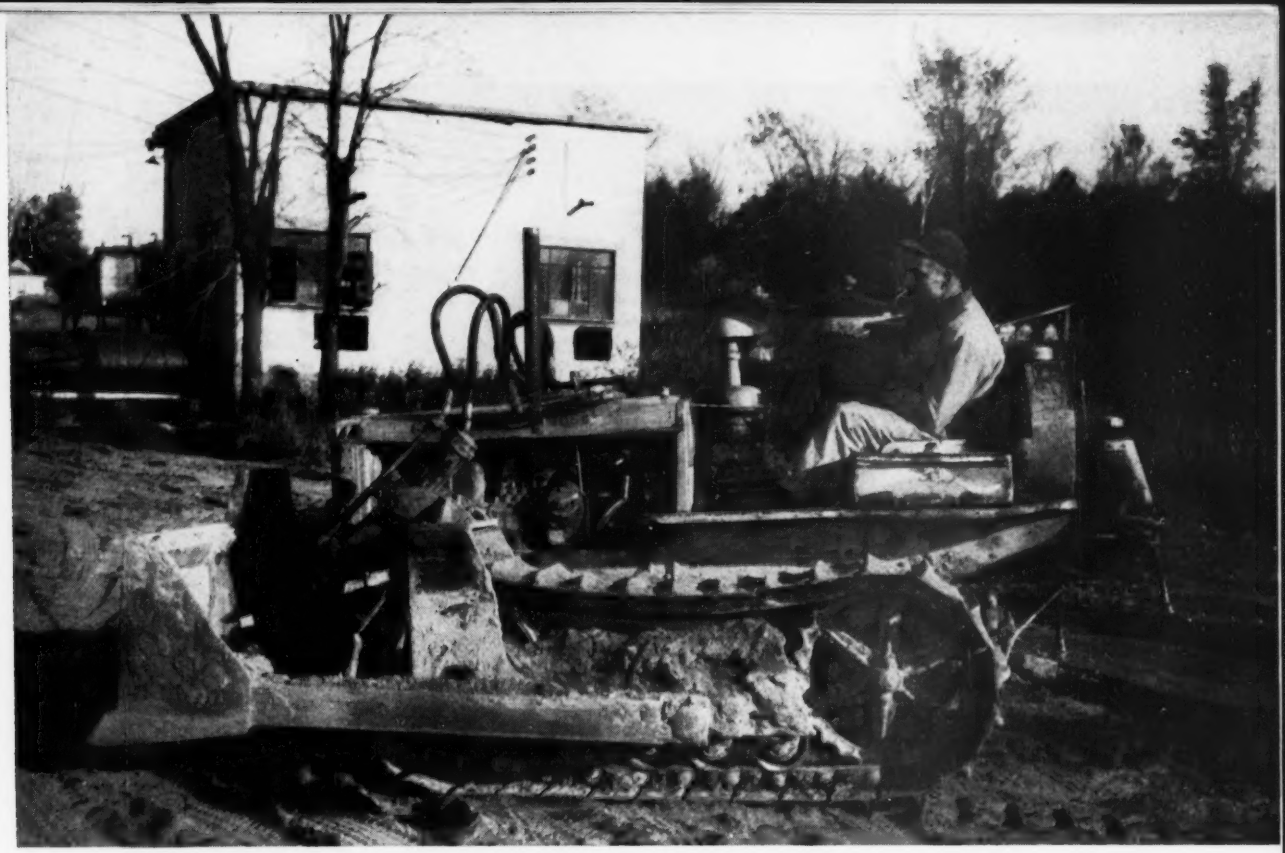
The job hasn't always been a breeze. Toughest work he ever had, Elowsky says, was in 1926, when he and his father installed a hydro plant and grist mill without outside help. Two years later, both plants burned down.

"It took us 30 days to recover," he said. "And we had a really bad time in 1937, when the dam washed out after a heavy rainstorm. The water went right over and around the dam, and we had to dynamite the gates to get them out of there.

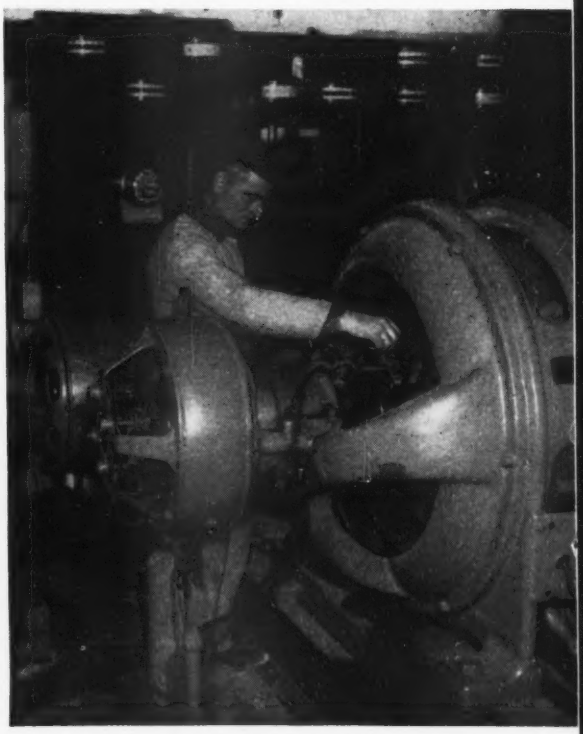
"The whole town turned out to help my father and me rebuild the dam. A lot of them brought tractors. We were without power for 20 days, that time."

Nowadays, he said, the power companies and REA's in the area are "quite cooperative" when Hillman has an outage. But Elowsky is as unhappy as any utility executive when service goes out. So he is trying to negotiate with another utility for an interconnection so the village won't suffer long outages when part of the plant is down.

There are 442 people in Hillman, set in the rich farmlands of Montmorency County. Through 40 years, they've became used to the Elowsky power operation, and they look for Hillman Light, Power & Water Co to keep up its independence.



. . . He's a one-man power company who tends lines, builds roads . . .



. . . bills his customers, and keeps the village of Hillman, Mich., alight.

Harold Green, General Electric; Lee McClurkin, Savannah Electric & Power; Kay Leighton, GE

Southeastern Electric Exchange Sales Conference

(*Continued from page* 15)

meeting. Myrtle Fahsbender, Westinghouse Electric Corp, said, "We as an industry must spread our own knowledge in a constantly expanding area covering every group that influences the homeowner. This is a tremendous job, for the groups are many—architects, builders, manufacturers, dealers, interior decorators, the press, and of course the homeowner himself."

Home lighting prospects for the next ten years were discussed by Harold Green and Kay Leighton, General Electric, relating the manifold activities included in the promotion of "light conditioning" in the home.

The better a company's own community relations, said Henry Obermeyer, Bozell & Jacobs, Inc, the better it can utilize the facilities of PIP. He continued, "PIP is no substitute for a good public relations program. It has just one specific objective and that is to awaken those who have most at stake—your customers, workers and investors—to the continuing threat of a socialized industry which would be only a springboard to full government control of our economic life. No matter how good your local public relations may be, they will be of little use to you on the day a federal bureaucracy acquires enough force and influence to carry out its scheme for a super-power state."

SEE president, Lee McClurkin said that active public relations should be well formulated, and constantly reviewed, to obtain maximum benefit. He said that it is not enough for employees to participate in civic and community clubs. They should be well informed about company affairs so that they can discuss them intelligently with the public. McClurkin pointed out that employee surveys will reveal the strong and weak points of company representation in community affairs.

Condemnation by PUD of Chelan Plant Upheld

Washington State Supreme Court has upheld action of the Chelan County Superior Court in dismissing a petition that would have blocked the Chelan County PUD's condemnation of Washington Water Power Co's Chelan hydroelectric plant.

The higher court held the county court acted properly in dismissing an action, brought by the power company, seeking modification of a decree of public use and necessity issued to the PUD in 1948.

The power company contended that conditions had changed since the decree was granted, in that the PUD—having acquired additional hydro generating facilities—no longer needed the private plant to supply PUD customers.

The supreme court ruled, however, that the issue had not changed.

POWER BRIEFS

● A number of large generating units were put into service last month by utilities across the nation. These include: 125,000-kw unit at Southern California Edison Co's Etiwanda Steam Station bringing the plant to its full capacity of 250,000 kw; 40,000-kw unit at Northern States Power Co's Granite Falls Station increasing plant capacity to 60,000 kw; and 106,000-kw unit at Consumer Power Co's Justin R. Whiting plant raising capacity of the station to 276,000 kw. This month the first 106,000-kw unit goes on the line at Ohio Edison Co's new plant near Niles, Ohio.

● Washington State Supreme Court has been petitioned by Washington state fish and game directors and a Tacoma taxpayers group to rehear their appeal to deny Tacoma City Light the right to construct two hydroelectric dams on Cowlitz River. They contend the court erred when it ruled Oct. 14 that Tacoma has a valid license from Federal Power Commission to build the dams.

● Pacific Power & Light Co has been given final go-ahead by city commissioners to complete construction of an intertie line between a Bend substation and the Midstate Electric Co-operative system following a work stoppage caused by residential area protests in mid-October. Project is expected to be completed this month.

● Chelan County PUD, Wenatchee, Wash., has asked Federal Power Commission for permission to start engineering studies preparatory to building a run-of-the-river hydroelectric dam on the Columbia River at Rocky Reach, ten miles north of Wenatchee. The site has an appraised potential of 780,000 kw.

● Cornell University expects to have a new high-voltage research laboratory in operation within a year to replace one destroyed in a $1-million fire two years ago. Like its predecessor, the lab will be used for research and testing in the high-voltage field.

● Kansas Gas & Electric Co has put its new Murray Gill steam plant into operation. The station has 47,000-kw unit and a 70,000-kw unit.

● Richmond, Ind., is planning to spend $5,750,000 for a new generating station for the municipal light plant in 1954, Earl Beck, plant manager, announced recently.

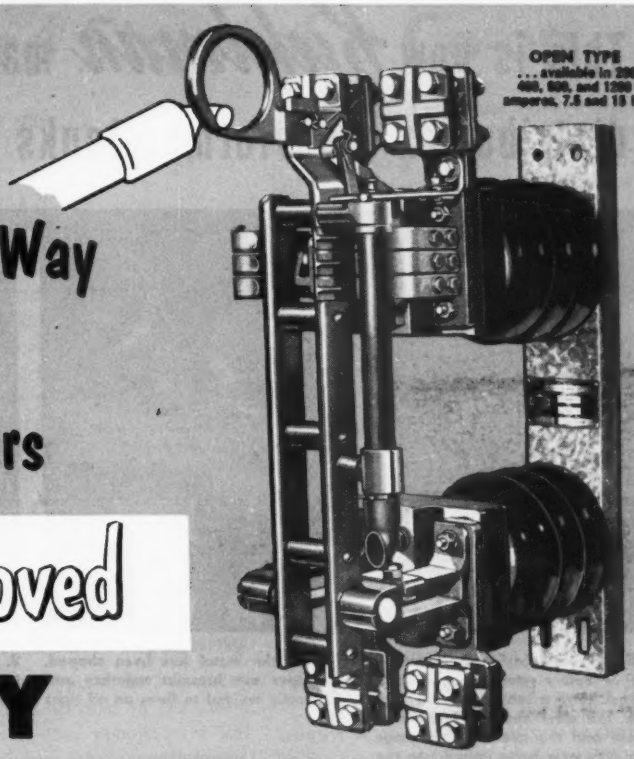
Here's the Simplest, Safest Way to By-Pass Voltage Regulators

the New Improved

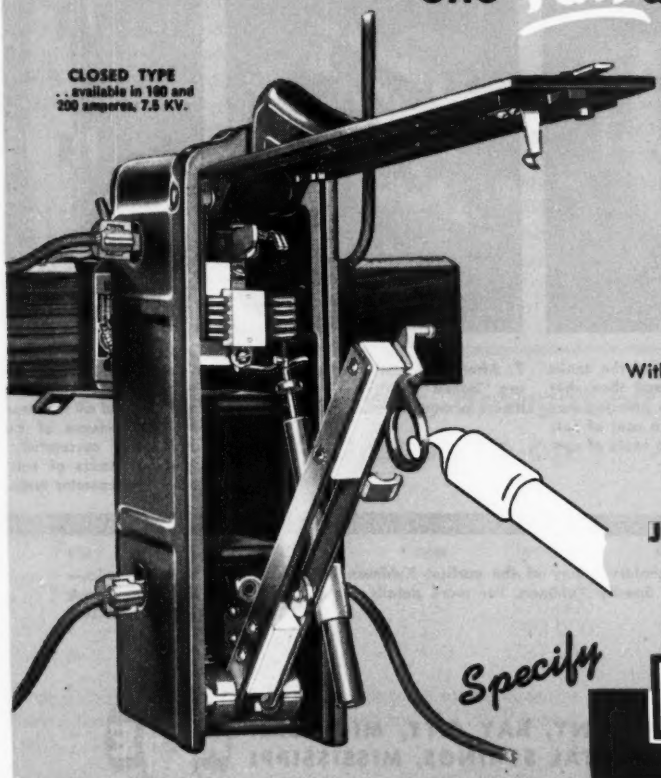
KEARNEY

BY-PASS DISCONNECT SWITCH

one Pull does 3 switching jobs



OPEN TYPE
. . . available in 200, 400, 600, and 1200 amperes, 7.5 and 15 KV.



CLOSED TYPE
. . . available in 100 and 200 amperes, 7.5 KV.

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Automatic make-before-break eliminates all danger of load-dropping

O OPENS BOTH REGULATOR LEADS
Without arcing at the contact points

O INTERRUPTS THE EXCITING CURRENT
For absolutely fool-proof safety

With this one KEARNEY switch to take the place of three, you save switchgear expense, installation costs and substation space.

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For Better Construction . . . Safer Maintenance

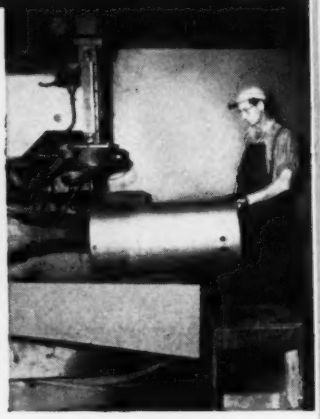
243

This is how *Kuhlman* makes distribution transformer tanks

1. All Kuhlman transformer tanks are made of heavy gauge copper bearing steel. Here a tank begins to take shape. The steel has been measured and cut and the necessary openings made. It is now being rolled into the shape of a cylinder.

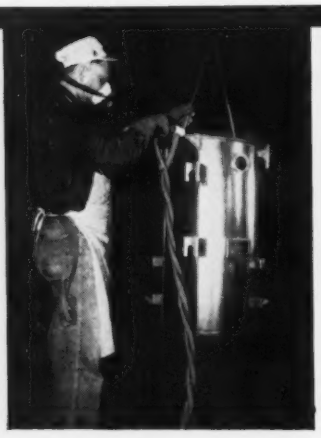
2. After the metal has been shaped, the edges are brought together and electrically welded to form an oil tight seam.

3. Next, the top end is "rolled down" to a smooth lip to form a suitable gasket seat.



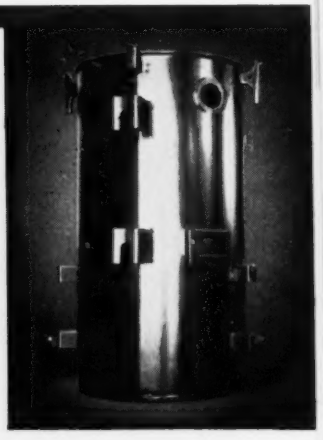
4. The next step is to attach the bottom. This is first "spotted" and then electrically welded all the way around to form an oil tight seal.

5. After the bottom end has been "rolled down" to form a smooth lip, the necessary accessories such as lifting ears, nameplate bracket, and mounting brackets are spot welded onto the tank as shown above.



6. Before they are painted the tanks are chemically cleaned and then shot blasted to assure a clean painting surface. Each tank receives a coat of rust inhibiting primer and two coats of corrosion resistant paint.

7. After each coat of paint the tanks are "baked" with infrared lights to insure a more durable finish.



8. And here is a completed tank, ready to receive its core and coil assembly and all necessary connections. Surfaces of Kuhlman tanks have successfully withstood 500 hours of salt spray and weatherometer tests.

Kuhlman transformers have been "on the line" for over half a century. Many of the earliest Kuhlman transformers are still in service—proof that Kuhlman builds rugged, highly efficient transformers. Specify Kuhlman. For more details about distribution transformers, ask for Bulletins CS-201 and CS-202.

Kuhlman **ELECTRIC COMPANY, BAY CITY, MICHIGAN**
CRYSTAL SPRINGS, MISSISSIPPI

KUHLMAN K E ELECTRIC

EXPORT REPRESENTATIVES: *International Standard Electric Corporation,*
15th Floor, 50 Church Street, New York 7, New York. Cable address: Microphone, New York.

Worry: One Word Story of a Co-op

Howell-Oregon leaders in Missouri watch as . . .

- **Falling farm profits and . . .**
- **Worst drought on record . . .**
- **Force customers to seek greener pastures**

A tall, lean farmer wearing faded, blue overalls and a tan shirt edged up to the modernistic billing desk at the Howell-Oregon Electric Cooperative near West Plains, Mo.

It was near the middle of the month, but he wasn't yet ready to pay his power bill which had been due on the first. Rather he wanted to know how much time he had before his lights would be shut off.

The question reflects what is happening at the Howell-Oregon Co-op. A prolonged drought combined with lower farm prices has hit farmers in the area, and is having its effect on the electric co-op which serves them.

Howell-Oregon Co-op, serving portions of six southern Missouri counties, is in the center of one of the hardest-hit drought areas in the Southwest. Chief agricultural activities are dairy farming and cattle raising.

View from the picture windows of the co-op headquarters helps explain the plight of the farmers and the co-op. Once-green pastures are a dusty brown and here and there a tree is dying. Cattle raisers are forced to buy hay and haul water to keep their stock alive.

Balance sheet of the co-op is a pretty good indicator of what is happening. Natural growth of the co-op is coming to a halt. There have been but 75 customers added in the past year, while idle services increased by 157. Revenue and power sales are up from last year, but again the increase is less than in years past (see table).

These figures do not include an added 1,000 customers and increased sales and revenues which resulted through acquisition of three small towns into the co-op system. These are considered aside from the normal growth of operations.

What Has Been Happening

Only way to explain the increasing number of idle services in the co-op service area is that people have left their farms for other employment. Vacant rural houses with empty meter slots help to tell the story. There are about ten such vacant houses within a four-mile radius of the co-op headquarters. Some of these are neatly painted bungalows, others are tar-paper shacks.

Joe R. Hinds, manager of the co-op, has talked with several of the families who have moved away from his area. His impression is that most have had to move to larger cities to find employment. Many are continuing to hold on to their farms in hopes of returning soon after the drought breaks.

Marginal farmers were hit first and hardest. Number of idle services increased fastest last year soon after the drought hit. During the first nine months of this year the number has not been as great because those farmers remaining appear to be better prepared.

Should the drought continue into next spring, it is almost certain that many farmers still remaining will be touching bottom. "This area will hold out if we can just manage to get some rain next year," Hinds says.

Although the migration of farmers to other areas would indicate a near depression around West Plains, that is hardly the case with the co-op. This year, for the first time, it is operating in the black. It has paid $25,000 in advance on its federal loan and its load-building efforts have been heartening.

Rural families still in the area are using a larger share of electricity than in the past—helping to offset the effect of idle services. An electric range sales campaign last spring resulted in adding more than 100 ranges to the co-op load. Hot weather during the summer pushed use of cream coolers and fans.

Although it is certain that many of the dairy and cattle farmers are operating at a loss or on an extremely close margin, the number of delinquent accounts at the co-op remain about the same this year as last.

Other Effect of the Drought

A look at general conditions in the immediate area offers few concrete guides to future business either for the co-op or for retail stores.

When the Highland School five miles north of West Plains opened in September, only five pupils turned up. There had been 21 in the same school last year. Immediate explanation was that many families had moved out of the community, but by mid-November there were eight or nine pupils at the school.

There are the same sort of confusing statistics from other activities.

The local daily newspaper in the area claims circulation and advertising are at an all-time high.

A general store in West Plains esti-

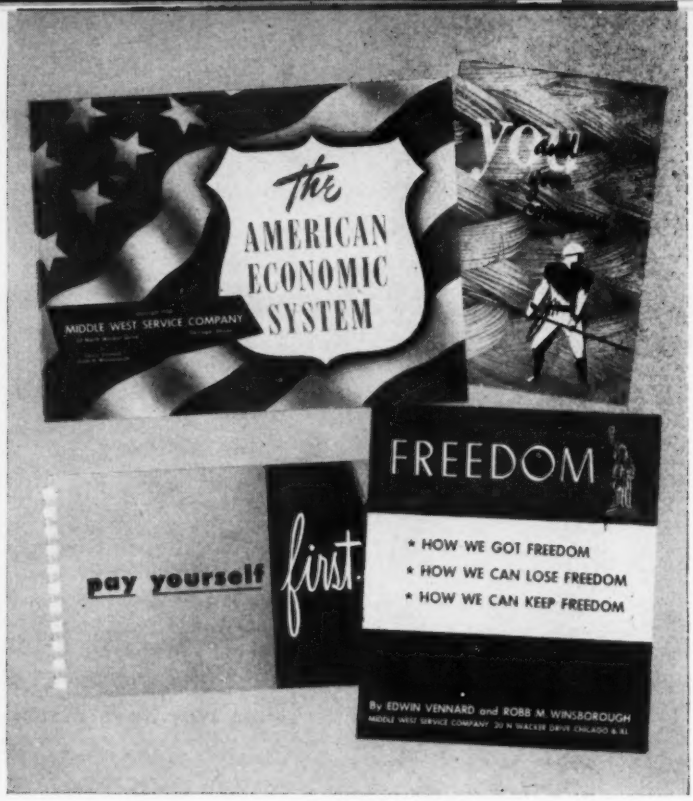
(*Continued on page* 24)

How lower profits, drought hit Howell-Oregon co-op

Year	Idle Services During Year	Idle Services Cumulative	Connections	Revenue (Jan-Sept)	Kwhr Sold Each Year
1950.....		619	5,901	$217,700	3,675,163
1951.....	282	901	7,187	270,000	4,627,102
1952.....	378	1,279	7,335	293,000	5,686,815
1953★.....	157	1,436	7,410	337,949	6,332,879

★ 1953 figures do not include three small towns brought into system. With these, the actual figures are: Connections, 8,410; Revenue, $372,000; Kwhr Sold, 7,389,134.

Industrial relations man Ririe . . .



uses this material at employee meetings in . . .

Getting Utah P&L's Message Across

Results of an employee opinion survey encouraged Utah Power & Light Co management to think that its picture of American economic and political systems could be presented effectively through employee information programs. In a survey of employees following the 1952 program, these opinions were among those expressed:

- 45% knew that in 1950 investor-owned utilities paid about 20% of total operating revenues in taxes.
- 76% realized that only about 6% of operating revenues is paid in lieu of taxes by Tennessee Valley Authority.
- 50% thought private industries should make a profit of 10%, while 38% realized that manufacturing concerns made an average profit of only 5%.

How employees changed their opinions after taking part in the 1952 program is indicated by "before" and "after" answers in the accompanying tabulation.

70% Participation by Employees . . . About 70% of employees participated in the survey and answered 56 questions based on material presented and discussed in small conference-type meetings over a four-year period. Unfortunately, a survey was not made prior to the first presentation; so the company does not have a base from which to measure improvement. However, it was felt that information presented to employees has created a more thorough understanding of economic problems.

The survey revealed that employees take the matter of voting seriously. Three-fourths of them felt it is impossible to have a dictatorship in a country where people are permitted to vote. Also, a full 77% did not agree with the idea that "the right to vote in elections isn't as important as it is made out to be because political parties choose candidates you can vote for."

One opinion almost universally shared by all employees is that banking and the basic industries definitely should not be government owned or operated. Of those surveyed, 95% turned down the idea of government engaging in such businesses as railroads, power companies, etc.

In answer to the survey question "How can we best keep our freedom?" these ideas were supplied by the following number of employees:

Vote in elections	369
Take interest in politics and local government	156
Study and know candidates and issues	155
Resist and limit government control	142
Keep informed and pass along information	126
Keep government out of business	85
Cut government spending	81
Write and contact Congressmen	62
Stop depending on government aid	56
Fight communism and end Korean war	21

How Utah Power & Light Co views information program for its employees

In our employee information program it has been our policy to present the facts without any pressure that might suggest a predetermined answer is the ultimate goal. Frank, open discussions develop conclusions that generally are wholesome. They take root in principles that are genuine, having been proven by time and experience.

Perhaps the greatest benefit that comes from an information program is a realization by the individual that he can do something about perplexing problems which heretofore he considered beyond his influence. If he understands, he will believe, and if he believes, he will sell to others—therein lies the key.

Olin H. Ririe,
Industrial Relations Manager

The information program consisted of four monthly meetings, each an hour and a half long. Some 94 meetings were held on company time each month throughout the company's service area. Enrollment was held to between 15 and 20 to give each employee a chance to participate in discussion.

First meeting showed how Americans stand with respect to the rest of the world in terms of living standards and commodities and services produced. Second meeting dealt with how our national wealth is shared among the various groups—labor, management, and capital—that produce it.

American Profit and Loss System . . . Third meeting described the American profit and loss system to show what keeps it operating and to acquaint employees with the things that interfere with its operation. Fourth meeting discussed where our wealth comes from.

Group leaders to conduct each conference were picked from among employees. Candidates included union and non-union members and supervisory and non-supervisory employees. Primary requisite for each leader was the ability to conduct a conference. Before the program got under way, group leaders met in Salt Lake City in a two-day conference to discuss the program and become acquainted with films and other material to be used.

This pre-program meeting was led off by Pres George M. Gadsby, Vice President Adam S. Bennion, and a representative of the American Banking Association. Supplementary material used during the program included booklets describing the aims and policies of the company, people, industries and products of its service area, and accomplishments of the electric utility industry.

How employees reacted to the information program:

		% holding opinion Before	After
1. Should the government, instead of banks, do more or less of the lending of money?	More	9	3
	Less	88	97
2. When times get hard and prices go down			
Wages should go down also		57	89
Government should keep wages from dropping		29	11
3. Federal government should be responsible for providing willing and able workers with a job	Agree	34	21
	Disagree	58	79
4. Percentage of revenue TVA pays in lieu of taxes is about	6%*	70	76
	12%	5	13
	18%	1	7
	24%	1	4
5. Percentage of total operating revenue paid in taxes by investor-owned utilities in 1950 was about	10%	3	6
	15%	18	13
	20%*	33	45
	30%	31	36
6. About how much has Utah Power & Light invested in equipment per employee?	$ 5,000	35	20
	$15,000	29	28
	$30,000	15	12
	$60,000*	10	36
7. About how many stockholders does Utah P & L have?	3,000	8	5
	6,000	21	12
	12,000*	26	36
	18,000	13	23
	25,000	12	24
8. What was average profit on investment made by all manufacturing companies in 1951?	25%	9	7
	20%	18	12
	15%	20	15
	10%	29	28
	5%*	16	38
9. What is a fair profit for a company to make on its investment?	25%	4	4
	20%	14	9
	15%	16	15
	10%	40	50
	5%	20	22
10. To keep prices fair,			
Government should control them		22	9
Competition is enough without government control		73	83

Note: Where percentages do not add up to 100%, difference is due to "no opinion" answers. Starred items 4-8 indicate correct answer.

Drought-Stricken Co-op

(*Continued from page* 21)

mates sales are off about 12% from last year.

Farm real estate sales are slow, but prices are reported holding their own.

Sale of groceries is up because vegetable gardens failed to produce.

Restaurants say business is off some from last year.

There are almost no 1952 or 1953 model automobiles on the roads in the area.

To add further to the confusion, bank deposits at the First National of West Plains were $7.8 million Sept. 30, up slightly over the $7.5 million on that date last year.

One possible explanation is that farmers are liquidating their holdings in an attempt to meet current operating costs. A more optimistic view is that the high deposits are a sign of the stability of the trade area despite the worst drought on record.

Fuel Advisory Service

British Productivity Council is setting up a non-profit company to provide increased fuel efficiency advisory services for industry. The company, to be called National Industrial Fuel Efficiency Service, will provide general advice to industry and non-industrial establishments other than domestic users and to give practical help to secure most efficient and economical use of all forms of fuel, heat, and power.

Morse Raps Governors on Hells Canyon Stand

National Hells Canyon Association's campaign to whip up public support for a high federal hydroelectric dam in the Snake River where Idaho Power Co wants to build three low-head power structures brought together 125 supporters in Portland, Ore., Nov. 21 to hear Sen Wayne L. Morse keynote the first meeting of the organization since it was formed May 23. The meeting was one of a score the maverick Oregon independent senator has addressed throughout Oregon in recent weeks at which he has frequently attacked Republican Administration power policy.

Morse criticized Washington's Gov Arthur B. Langlie as well as Oregon's Gov Paul L. Patterson and Interior Secretary Douglas McKay. Langlie's arguments that Hells Canyon Dam is "not a political issue" is part of a "propaganda shift" by Republican leaders who are scared, Morse said. The senator declared a "packed committee" of engineers could not be depended on to protect the public's interest and said the Federal Power Commission hearing was important for "making a record" that may go to the Supreme Court. He did not elaborate on this suggestion beyond stating that NHCA needed funds to carry on this work.

A few days earlier, Clyde T. Ellis, executive manager of the National Rural Electric Cooperative Association, Washington, D. C., told a Portland assembly of Pacific Supply Cooperative members that prospects for a high dam at Hells Canyon were brightening. The co-op's annual meeting brought together delegates from four western states interested in development of Idaho phosphate deposits for fertilizer.

The co-op members later passed a resolution urging speedy construction of a federal dam in the middle Snake's Hells Canyon site which the farmer supply organization said was necessary for obtaining electricity at rates it argues would be lower than by private development. The co-op holds leases and owns phosphates tracts in southern Idaho where it claims investment of $2.5 million and asserts it is prepared to spend another $15 million.

Wins Franchise Election

Residents of Madison, Fla., last month approved a 20-year franchise for Florida Power Corp by a vote of 337 to 24. Ninety per cent of the qualified voters cast their ballots in the election piling up a 14-to-1 margin in favor of the utility. Florida Power has never lost a franchise election.

Nation's First Private Nuclear Reactor

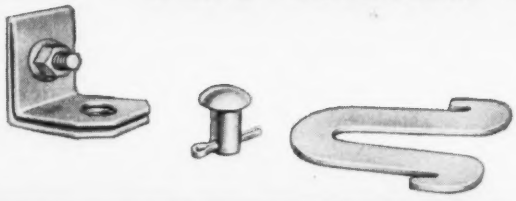
First privately owned nuclear reactor is checked by engineering students at North Carolina State College. The reactor also is the first constructed exclusively for peacetime development. Shown in background of picture is bank of electronic recording and controlling instruments specially developed by Minneapolis-Honeywell Regulator Co to regulate key aspects of the $120,000 low-power reactor.

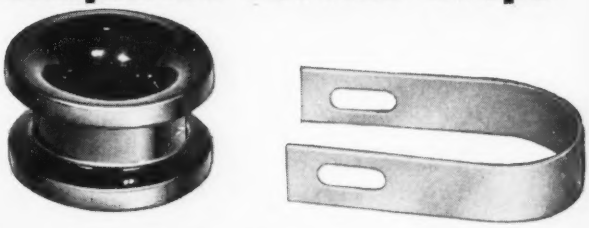
The reactor, which at full output generates 10 kw of heat energy, will be used primarily as part of the college's nuclear engineering curriculum. Among its uses will be accumulation of data which may spur atomic power development. The one kilogram of U-235 to run the reactor is loaned by the Atomic Energy Commission.

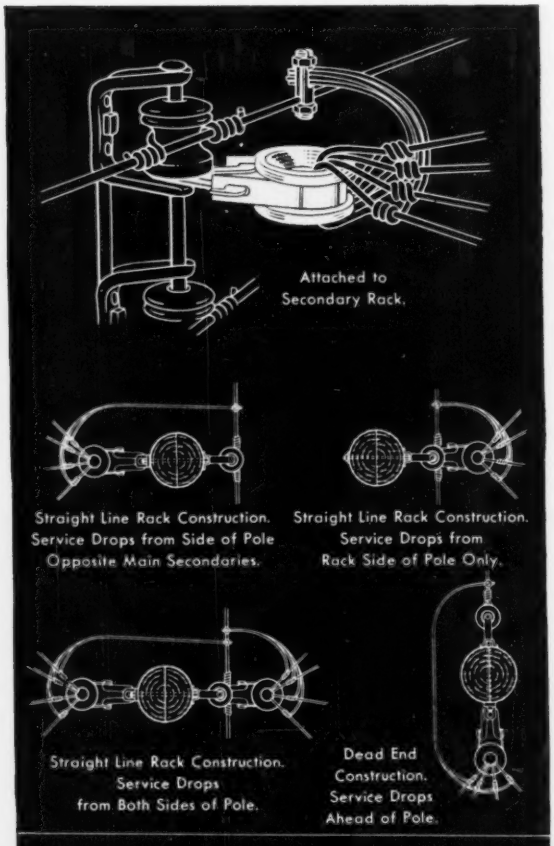
LINE CONSTRUCTION BLUEPRINTS

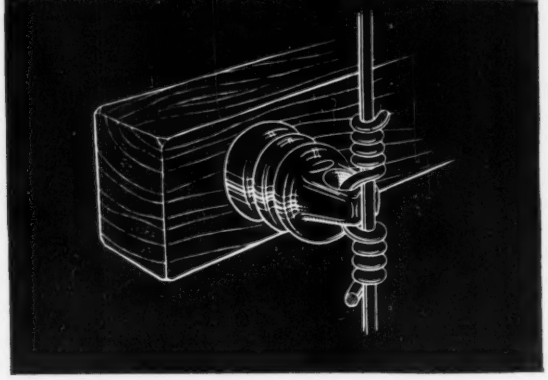
HOW SOME UTILITIES ARE MAKING CONSTRUCTION WORK EASIER . . .
IN WAYS THAT MAY BE HELPFUL AND USEFUL TO YOU.

L-M's Versatile Take-Off Insulator Simplifies Service Drops






Attached to Secondary Rack.
Straight Line Rack Construction. Service Drops from Side of Pole Opposite Main Secondaries.
Straight Line Rack Construction. Service Drops from Rack Side of Pole Only.
Straight Line Rack Construction. Service Drops from Both Sides of Pole.
Dead End Construction. Service Drops Ahead of Pole.

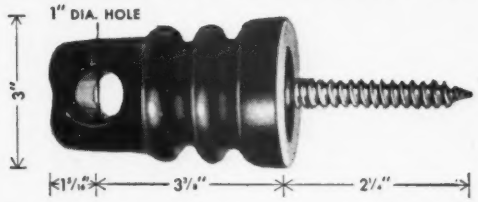


With the L-M Take-Off Insulator, it's much easier to install service drops. The Take-Off eliminates overloading of secondary rack spools and tangled connections. May be attached to secondary racks or directly to the pole. Simplifies installing, replacing, removing, or changing service drops; simplifies the operation when main conductors are replaced.

Easily used on either old or new construction. On old construction the yoke is just slipped under the rack spool, band is placed around insulator and snapped onto the yoke. Then service wires are transferred to the porcelain ring. Blueprints at left and below show some suggested uses.

Steel parts are heavily galvanized. Wet-process porcelain insulator has a 4" outside diameter with a 1½" diameter center opening. Available for pole or rack mounting; pole face attachment and insulator available separately. Ask the L-M Field Engineer for a sample.

L-M INSULATED PRIMARY LEAD BRACKET



A variety of applications. Many utilities find it particularly useful on crossarms to train primary and series street lighting leads. Wet-process brown glazed porcelain insulator 4 1/16" long, 3" diameter, with 2¼" No. 22 galvanized-steel wood screw.

Many L-M Construction Materials to Help Solve Your Problems

L-M offers a wide variety of Line Construction Materials and Specialties to help simplify your construction jobs. Ask the L-M Field Engineer for literature; or write Line Material Company. Explain your problem and we'll be glad to make suggestions. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL
Line Construction Materials

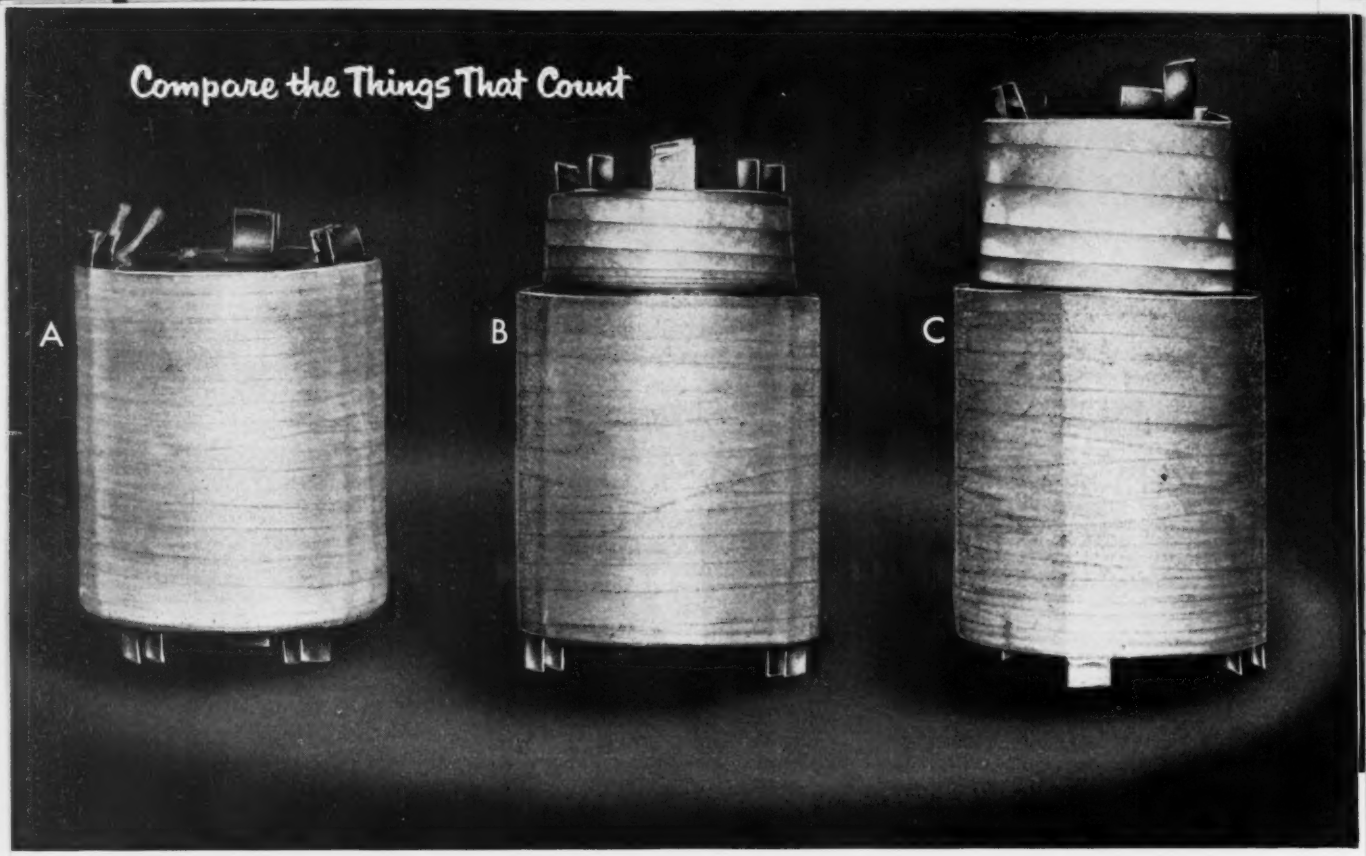


FIGURE 1: Results of the new shock test of varnish bonding strength. Coil A, impregnated with the best varnish, shows no separation. Coils B and C show too much separation, and the varnishes were rejected. For comparison, a coil whose insulation paper is brushed with shellac during winding will be torn almost completely apart, and an unimpregnated coil will be entirely separated.

FIGURE 2: Impregnated coil prepared for the shock test. Steel straps around the inner coil are fastened to the yoke at the top; straps around the outer coil are fastened to the bottom yoke. Coils will be violently jerked in opposite directions.

"Round-Wound" is a Line Material Company trademark

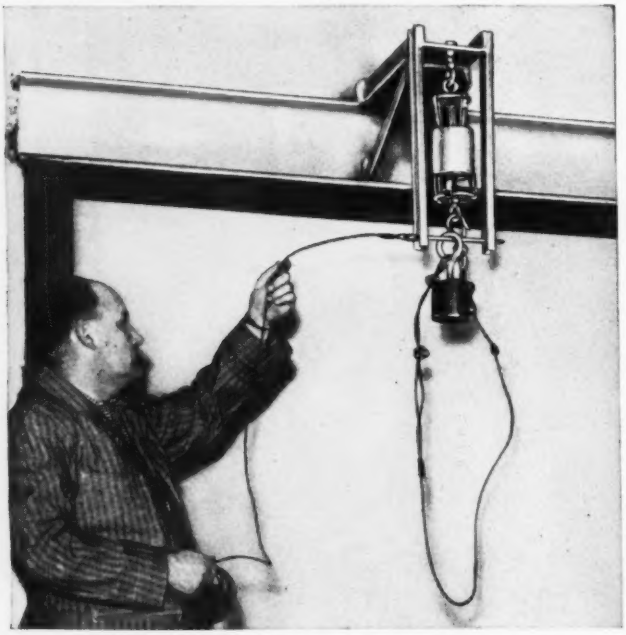


FIGURE 3: Shock test equipment. The top yoke is hung from a rigid support. A 10-pound weight attached to the bottom yoke by a steel cable is dropped 7 feet, resulting in an impact shock of 212 pound-feet per second. The amount of separation of the high voltage from the low voltage winding after one impact determines bonding strength of the varnish being tested.

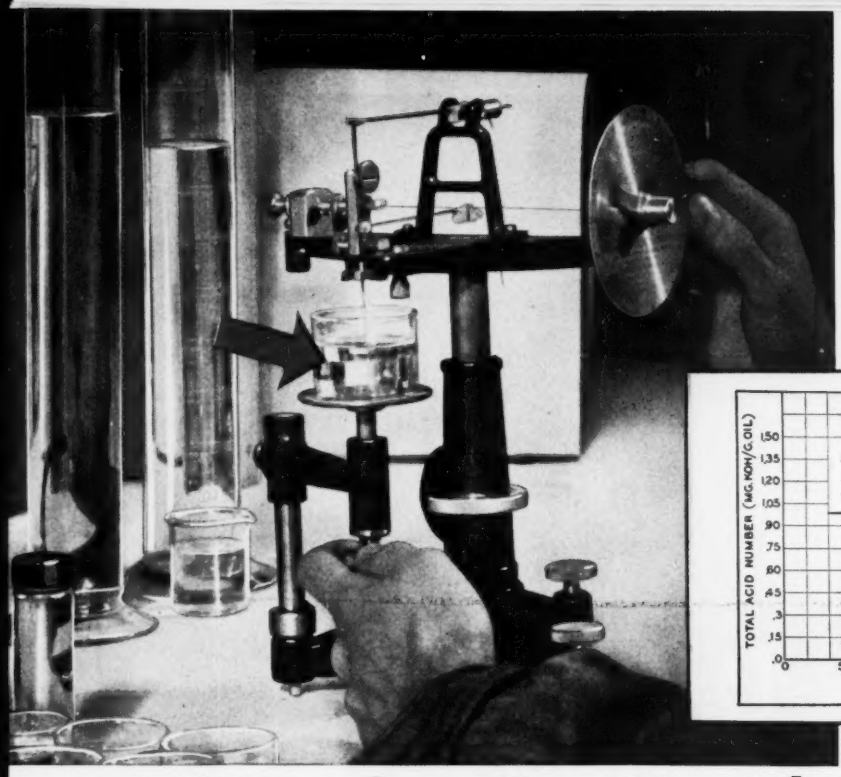
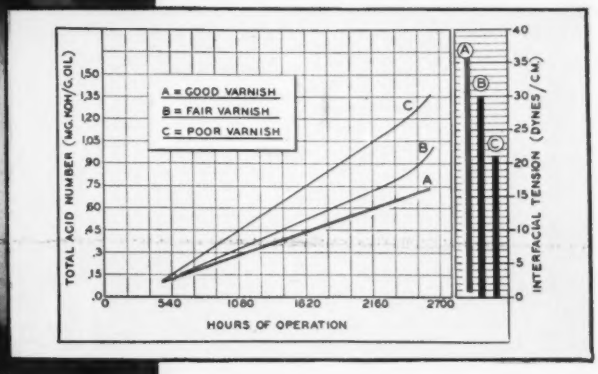


FIGURE 4: Interfacial tension tests of transformer oil (arrow), before and after cured varnish samples have been baked in the oil, are accurate predeterminations of the long-term resistance of the varnish to the oil.

FIGURE 5: Curves show long-term oil acid number for three different varnishes; bars show comparative short-term interfacial tension of the same varnishes.



L-M Develops New Varnish Tests To Assure Stronger Coils In Round-Wound Transformers

In addition to bonding strength, varnish requirements include low curing temperatures and freedom from contamination of or by the oil.

by **MARTIN I. ZWELLING**
Chief Laboratory Engineer
Transformer Division
Line Material Company

The primary, if not the single, reason for varnish impregnation of transformer coils is to resist short-circuit mechanical shocks. Under abnormal currents, windings tend to fly apart radially, and coils try to separate axially. In addition to strong blocking and clamping, good varnish impregnation is a substantial aid in resisting these forces.

But the problem is to get the right varnishes. Some varnishes will tend to dissolve in oil and thus lose their bonding strength. Others may appear not to dissolve but may actually contaminate the oil in long-term service and cause it to deteriorate more rapidly.

Curing must be complete, throughout the entire mass of the varnish and the coil. Some varnishes require curing temperatures so high that the life of the cellulose insulation is seriously reduced. Some varnishes simply do not possess the inherent bonding strength needed to resist short-circuit shock.

Recommended New Procedures

One drawback to selecting varnishes which meet all the requirements has been the lack of adequate tests for determination of varnish characteristics. Therefore we have developed new procedures to give us the necessary information.

One test (Fig. 4) provides a measure of the short-term resistance of varnish to transformer oil. Another measures the long-term resistance. Correlation between the two tests is very high. Compare the long-term rise in acids to short-term interfacial-tension test results in Fig. 5.

Bonding Strength Test

A new test was developed for varnish bonding strength (Figs. 1, 2, and 3). This test endeavors to pull sample coils apart by mechanical shock. An unimpregnated coil will be torn completely apart. Only the very best varnish completely resists separation.

Correlated With Service Conditions

Tests have been checked and closely correlated with actual service conditions, by comparing the condition of the oil and the resistance to short circuit of actual transformers impregnated with the various grades of varnish, with the laboratory tests of the same varnishes.

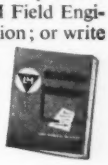
Benefits To Transformer Users

As a result of the program, we have been able to secure varnishes that have better resistance to oil, greater bonding strength, and lower curing temperatures so that there is less effect on cellulose insulation. Excellent characteristics of normal properties, such as dielectric strength, are also obtained.

All of these activities are part of a broad L-M engineering program that has been markedly successful in providing, in L-M Round-Wound transformers, the most desirable performance characteristics, with the added benefits of low operating costs and exceptionally long life.

Get The Whole Story On Round-Wound Transformers

Get the facts on the outstanding characteristics, the "Balanced Performance" of L-M Round-Wound Transformers. *Compare the things that count!* Ask the L-M Field Engineer for Bulletins and information; or write Line Material Company, Transformer Division, Zanesville, Ohio (a McGraw Electric Company Division).



135

LM® LINE MATERIAL Transformers

A
Merry Christmas
Happy New Year!
The Porcelain Insulator Corporation
PINCO

NEWS ABOUT PEOPLE

Hough Named a Vice President

Union Electric Co of Missouri also reappoints newly elected official to the post of chief engineer

EUGENE L. HOUGH

Eugene L. Hough has been elected a vice president of Union Electric Co of Missouri. He also was reappointed chief engineer of the company, a post he has held since 1951.

Started As Electrical Engineer . . . After graduating from the University of North Dakota in 1922 with a B.S. degree in electrical engineering, Hough spent six years with General Electric Co before joining Union Electric in 1928 as an electrical engineer.

Hough was appointed in 1943 as chief design engineer. Since becoming chief engineer in 1951, he has been in direct charge of all of the engineering and construction work for the Missouri company.

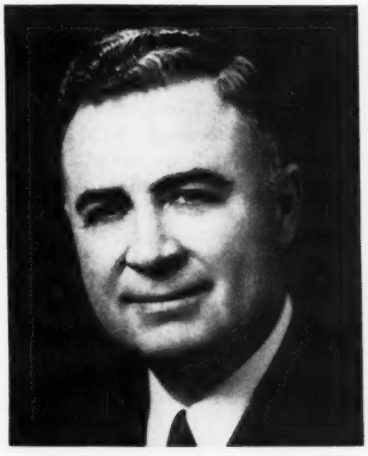
N.J. Group Elects New Officers

Hagan of Atlantic City Electric is made president of association. Curtis, Sweeney named a vp and treasurer, respectively

Charles M. Hagan, executive vice president and director of Atlantic City (N. J.) Electric Co, has been elected president of the New Jersey Utilities Association to succeed Herbert E. Cliff, general commercial manager of Public Service Electric & Gas Co, Newark, N. J.

Other officers elected by the association include: Vice president, Edward A. Curtis, vice president of New Jersey Bell Telephone Co; and treasurer, Hart T. Sweeney, secretary and treasurer of New Jersey Bell Telephone. Wilson S. Meyers, public relations director of Atlantic City Electric, will continue as secretary of the organization until his three-year term expires in 1955.

Hagan started with Atlantic City Electric in 1928 as a power engineer. Two years later he was appointed district superintendent in Paulsboro, becoming division manager for the Salem area in 1940. In 1946 he was made assistant general manager with offices in Atlantic City. He was elected a director in 1947, a vice president in 1949, and executive vice president in 1952.



CHARLES M. HAGAN

CHARLES T. ABBOTT

Charles Abbott Elevated by NEGEA Service Corp

Charles T. Abbott has been designated senior electrical engineer of the NEGEA Service Corp, a subsidiary of the New England Gas & Electric Association, Cambridge, Mass. Abbott, formerly electrical engineer, replaces Edward H. Steele, retired.

After graduating from the Massachusetts Institute of Technology in 1930, Abbott became a junior executive trainee of Cambridge (Mass.) Electric Light Co, a subsidiary of NEGEA. In 1933 he was made distribution engineer, becoming electrical engineer in 1939. He served in that capacity until 1947, with system operating duties added during 1942-1947. At that time he was named electrical engineer with the Service Corp.

Steele, who was active with the electrical engineering department of the Service corporation over a long period of time, started his utility career 40 years ago with New Bedford (Mass.) Gas & Edison Light Co, a NEGEA subsidiary.

Appointed VP of Sales

Charles C. Cheyney, sales manager and a director of Buffalo (N. Y.) Forge Co, has been elected vice president of sales and engineering of the company. Cheyney, a graduate of Cornell University's Engineering School, was made sales manager in 1945 and was elected a director in 1949.

R. S. Keefer Heads Okonite Co

Firm's new president succeeds Albert Metz, new board chairman. Youmans, Kirkland, and Nurse are advanced

R. STUART KEEFER

In expanding its administrative and executive structure, Okonite Co, Passaic, N. J., producer of electrical wires and cables, has made several top level appointments and created the new post of chairman of the board.

R. Stuart Keefer, formerly a vice president in charge of sales, has been installed as president of the company to succeed Albert F. Metz, newly elected chairman of the board and chief executive officer.

Okonite's greater emphasis in the area of research and product development has brought about three other executive appointments.

3 Named to New Posts . . . Edward D. Youmans, formerly vice president in charge of manufacturing and research, has been named vice president in charge of research and product development. Charles M. Kirkland, formerly factory sales manager for the company's Passaic plant, has been elevated to vice president in charge of sales, and David W. Nurse, previously resident manager of the Wilkes-Barre (Pa.) plant, has been promoted to vice president in charge of manufacturing for the company's three factories. Okonite also has a plant at Paterson, N. J.

Keefer entered the wire business in 1922, joining the Hazard Manufacturing Co. When that firm was reorganized as a division of Okonite in 1927, Keefer continued as assistant sales manager. In 1946 he was named sales manager of the company, transferring to the executive offices at Passaic. He was appointed a vice president in 1947, becoming a director that same year.

Youmans, who joined Okonite 40 years ago as a laboratory assistant, was made vice president and technical director in 1943, vice president in charge of manufacturing and research in 1951, and a director in 1952.

Kirkland, who started his career with Okonite in 1934, was appointed secretary of the company in 1939. During World War II he served with Army Air Force as a major, returning to Okonite in 1945. For the past three years he has been factory sales manager at Passaic.

Worked in West Coast Offices . . . After joining Okonite in 1942, Nurse worked in the San Francisco and Portland offices, transferring to the Wilkes-Barre plant early in 1950. At Wilkes-Barre he served as assistant sales manager, factory sales manager, becoming resident manager of the plant this year.

Metz joined Okonite in 1919. He was appointed comptroller in 1924, a director and treasurer in 1928, vice president in 1945, and president four years later.

EDWARD. D. YOUMANS CHARLES M. KIRKLAND DAVID W. NURSE

•

R. B. Donworth has been made manager of atomic power development for Duquesne Light Co. Prior to assuming the present post, Donworth was betterment engineer in the utility's power stations department. He joined Duquesne Light in 1930.

Walter S. Gordon, consulting electrical engineer of Tacoma, Wash., has been named chairman of the recently created Washington State Power Commission. **Roy Skill** of Yakima was chosen vice chairman and **Tom Quast** of Marysville secretary.

Clifford Hartley has been named superintendent of electrical construction for New England Power Service Co with headquarters at Worcester, Mass. He joined NE Power Service in 1925.

OBITUARY

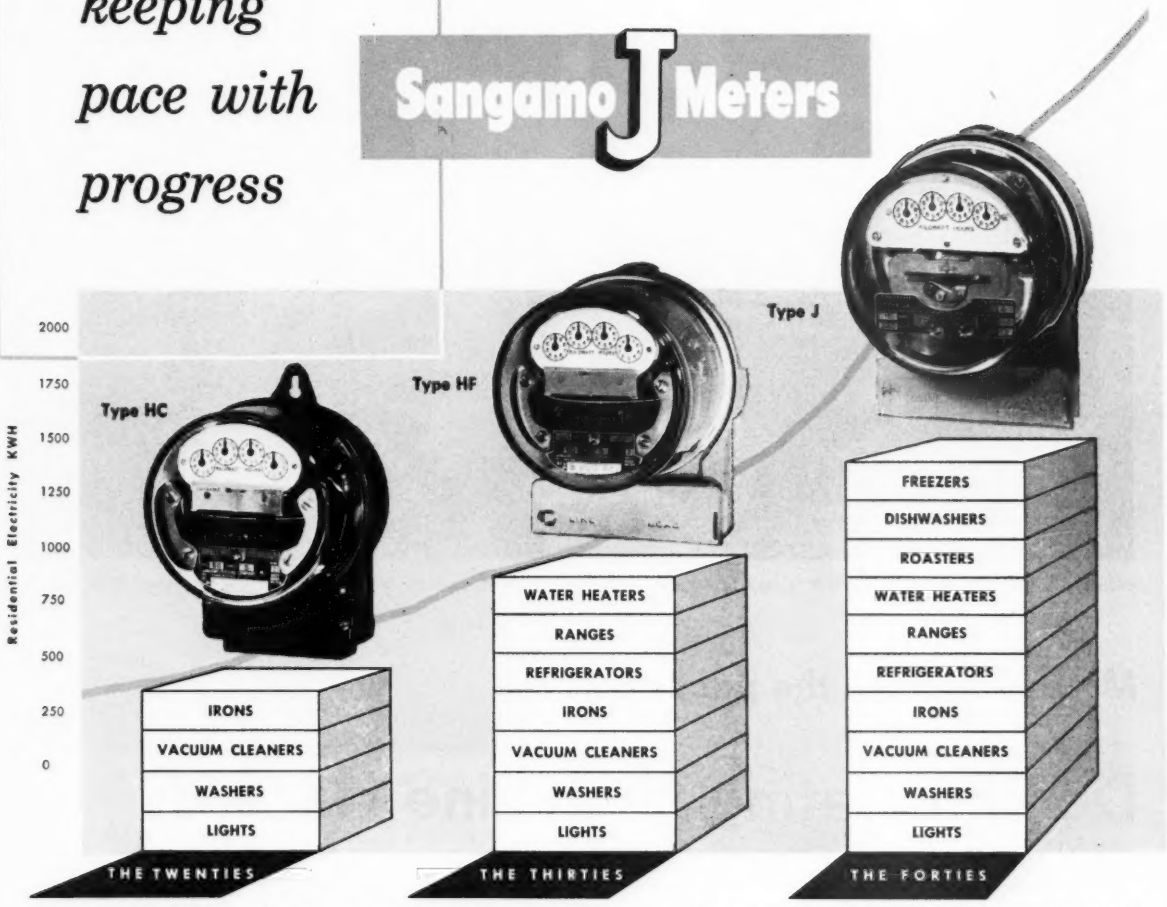
John O. Fuchs, 63, general operating manager of Central Hudson Gas & Electric Corp, died Nov. 8 at Poughkeepsie, N. Y. Fuchs, who joined Central Hudson in 1915, had served as manager of electric production for three years prior to assuming the operating post in 1952.

Chester M. Adams, 47, general sales manager of Bridgeport Brass Co, died at Newtown, Conn., Nov. 12. He joined Bridgeport Brass in 1923, serving the company at one time in Dayton, Ohio. He was made general sales manager in 1952.

Paul T. Kissinger, 59, director of customer service for Metropolitan Edison Co, died at Easton Pa., Nov. 19. Kissinger's career with Metropolitan Edison dates back to 1933 when he was made secretary to the general manager. Prior to being named to the post of director of customer service, he held various positions with the company, including that of personnel director.

keeping pace with progress

Sangamo J Meters

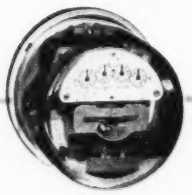


In the 1920's, the concept of a full-use customer was one with lights, an iron, and a vacuum cleaner. Today, the full-use customer has a range, water heater and many other major appliances.

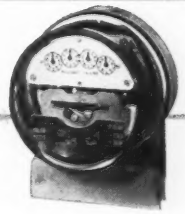
Through these years, Sangamo Meters have been adequately measuring these growing loads. Since 1940, the Type J has provided completely accurate measurement of large domestic loads as well as the loads of the small-use customer.

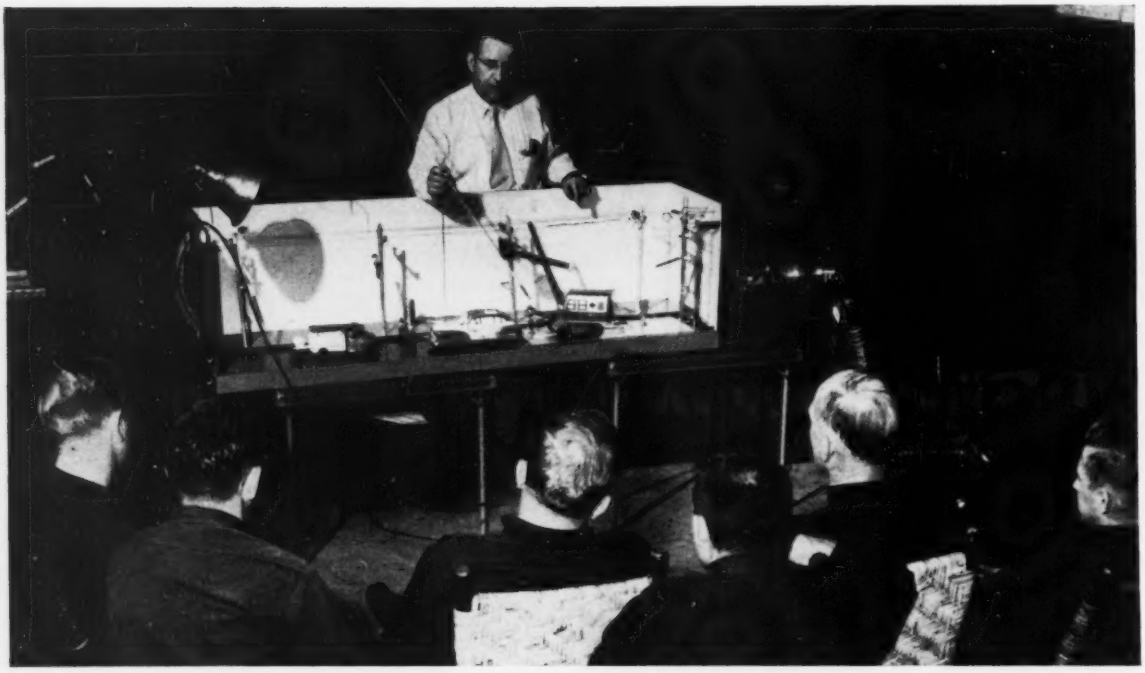
J Meters have met all requirements of the customer, the utility company and the meter superintendent. They have measured with great accuracy—have required little maintenance—and they have been easy to test and to repair.

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts



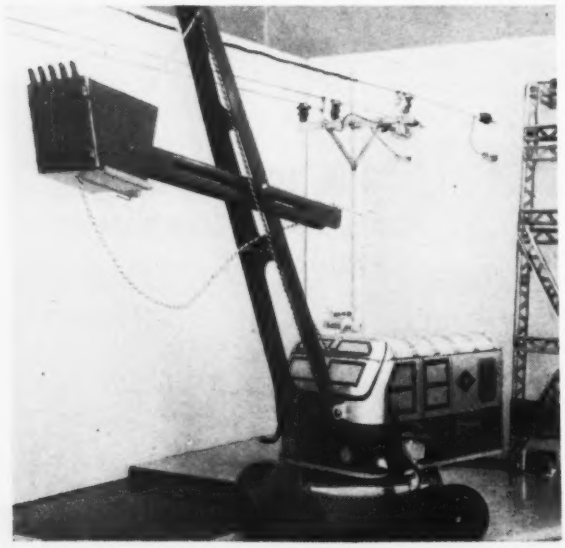


HIGH-LINE HAZARD DEMONSTRATOR is used by John F. Phelan, author of this article, in a talk on the dangers inherent in high lines

Models educate the public by . . .

Demonstrating High-Line Hazards

JOHN F. PHELAN, Chief Load Dispatcher, South Bend Division, Indiana & Michigan Electric Co



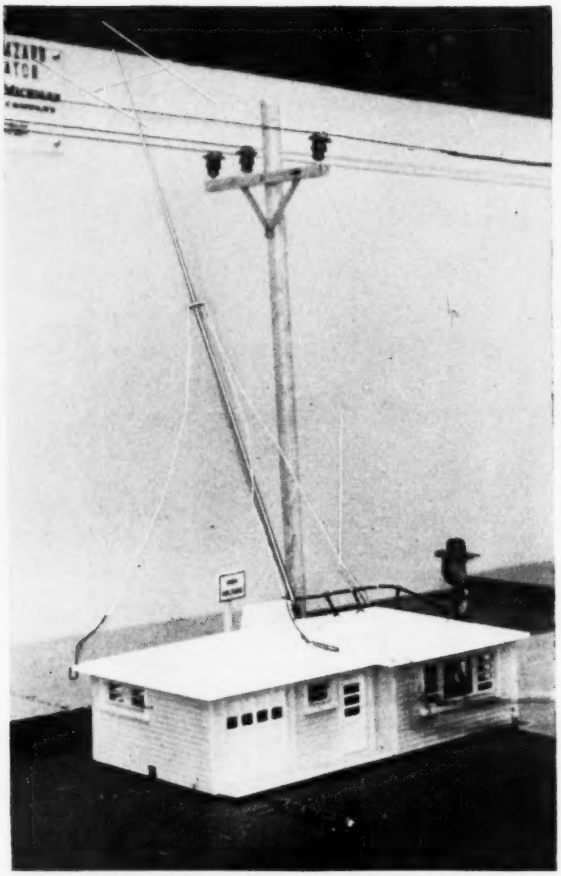
SPUTTERING ARC made by worker touching power shovel in contact with high line serves as a warning to men around such equipment

The hazards inherent in uninsulated distribution and transmission lines are being demonstrated realistically to customers of the Indiana & Michigan Electric Co. The demonstrations are made possible by a set of models, known officially as the "High-Line Hazard Demonstrator." This consists of a transmission line with cutouts, airbreak switch, crane and shovel, home with a TV antenna, automobile with driver and passengers, and statuettes which play the part of careless people.

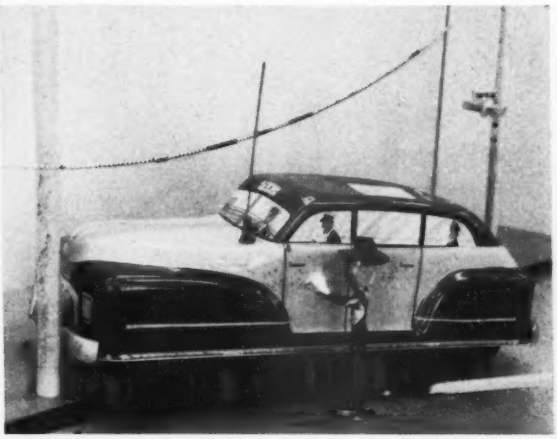
First Used to Train Employees . . . Originally the model set-up was used to train new system operating employees at the Twin Branch Station. Recently, the demonstrator was made available, with a lecturer, to schools and other groups. Since then over 2,500 persons have been fascinated by the educational but dramatic exhibition.

Here are some of the demonstrations:

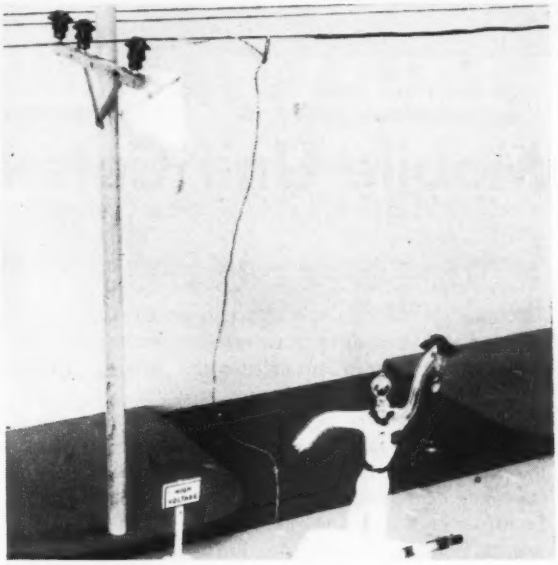
- Jacob's ladder shows how arc strikes at shortest gap, rises to point where it is blown out by air currents.
- Loaded disconnect switch is partially opened by "inching method." After reclosing, a fast opening shows how arc climbs up bus structure, ends in fault, flash, and explosion. A firecracker produces the noise effect.
- Stroke of high-frequency lightning hits model, maintains phase-to-phase arc as it travels along conductors.
- "Live wire" dropped from a "high line" onto a wood



TV ANTENNAS falling into high lines have caused many accidents and some deaths. Even those in house aren't immune from danger



IF A LIVE WIRE falls across an automobile, don't touch it. You will not only draw an arc as the model did but also will be electrocuted



THIS LITTLE "BOY" was very careless when he flew his kite. See it hanging on the wires. Now he is all lit up with high voltage energy

roadway is touched by a grounded metal man, drawing arc.

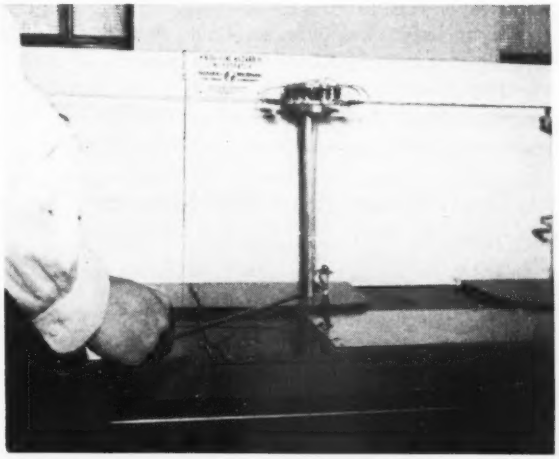
• Wire falls on automobile striking pole. When grounded metal man rushes up to help, he touches energized car and draws arc.

• Boom of rubber-tired crane contacts "high line." Energizing static spark is heard. When grounded metal man approaches, he draws arc.

• Kite flying is demonstrated by neon-filled glass figure representing a youth. Metallic cord tangling with "high line" causes figure to light up brilliantly, showing extreme danger. Situation is duplicated with dry string, showing no discharge; and with wet string, showing partial discharge. Wet string dropped on line simulates falling kite, causing steam and drawing crackling, flaming arc.

• Loose guy lets rooftop TV antenna fall on line. Explosion in house causes smoke to pour from windows and doors. Automatic equipment re-energizes the line, but fault has blown TV clear, leaving mast and guys "hot." When person attempts to remove debris without calling electric company, he draws arc.

Ideas like these were contributed by Indiana Electric employees. They also made various parts of the demonstrator, often by the cut and try method. Even the miniature porcelain insulators were hand-made. A neon sign transformer energizes the system at 15 kv. Equipment and metal midgets are moved with a small insulated stick.



AIR-BREAK SWITCH, the latest addition to Indiana & Michigan Electric's demonstration equipment, is most useful in training employees

Mobile Unit Cuts Long Outages

P. S. PUGH, Electrical Engineering Division, American Gas & Electric Service Corp, New York, N. Y.

Two 50,000-kva, three-phase mobile transformers that can be moved with all components except lightning arresters in operating positions have been purchased by Ohio Power Co and Appalachian Electric Power Co. The units can be operated either on the car or on the ground and provide insurance against long outages due to transformer failures in 93 transformer banks which are maintained by these two subsidiary companies of the American Gas & Electric Co System.

Fifty-thousand kva was squeezed into the space and weight formerly occupied by a 17,000-kva unit. This size was dictated by the 90-ton capacity of the largest drop-center railway car that can be built using four axles with 6½ by 12-in. journal brasses. The companies believed that use of larger and special journal brasses might delay repairs and going to six axles would increase its weight to such an extent that it would not be possible to use the car on many railroad spurs.

How Size Was Reduced . . . All components were mounted so that the maximum height during shipment is 15 ft 2 in. and the maximum width is 9 ft 8½ in. This was made possible by:

1. Mounting lightning arresters in cylinders at ends of the car during shipment. When in use, 132-kv arresters are mounted on outriggers and smaller arresters on brackets fastened to the transformer case.

2. Using forced-oil, forced-air cooling. Coolers are self supporting so that the transformer may be removed from the car if necessary.

3. Mounting transformer on side.

4. Simplifying the connecting problem. On the primary side three sets of bushings are provided for 132, 90.2, and 69-kv taps. In addition, two 2,070/3,600-v taps are provided above and below the 132-kv rating at the neutral end of the high voltage winding.

On the secondary side there are only three bushings for either 48, 35.5, or 24 kv. These bushings are connected to the secondary winding through a vertical oil-tight terminal board mounted between the two coolers. When changing taps, the oil in the compartment is forced by nitrogen pressure into the main transformer tank.

Multi-ratio bushing current transformers are supplied on all bushings to facilitate relaying. Hot spot temperature relay on each winding and differential pressure relays in the pumps protect the unit when used at an unattended substation.

Transformer Provides Numerous Transformations

High Voltage-Kv	Low Voltage-Kv	Rated Kva	Operating as
132 grd'd Y	90.2 grd'd Y	50,000	Auto-transformer
" " "	69. " "	"	" "
" " "	48 delta	"	2-winding transformer
" " "	35.5 "	"	" " "
" " "	24. "	"	" " "
90.2 " "	48 "	34,200	" " "
" " "	35.5 "	"	" " "
" " "	24. "	"	" " "
69 " "	48 "	26,100	" " "
" " "	35.5 "	"	" " "
" " "	24. "	"	" " "

Aging characteristics of RoZone compounds, highly important to the life of the cable, are constantly checked by means of oxygen "bomb" and long-time heat tests.

5-conductor control cable RoZone insulated, Neoprene sheathed, outer sheath of RoPrene (Neoprene)—600 volts.

Rome RoZone®

Superior Ozone-Resistant Insulation Deserves Your CONFIDENCE

What its Excellent Aging Characteristics Mean to You

Q: Why have oil base compounds been recognized as superior for over half a century?

A: Partly because of excellent moisture and ozone resistance, but particularly because of their resistance to natural aging effects. Such cables are still operating satisfactorily today.

Q: How do we know that RoZone oil base compound has superior aging characteristics?

A: First, because it exceeds industry specification requirements. Second, because this type formulation has been time proved for over fifty years.

Q: Are the applications of RoZone limited by its aging qualities?

A: No. RoZone insulated cable can be used in practically any application because of its excellent aging properties. It is successfully installed direct in earth, in conduit, in racks, overhead and in combination runs.

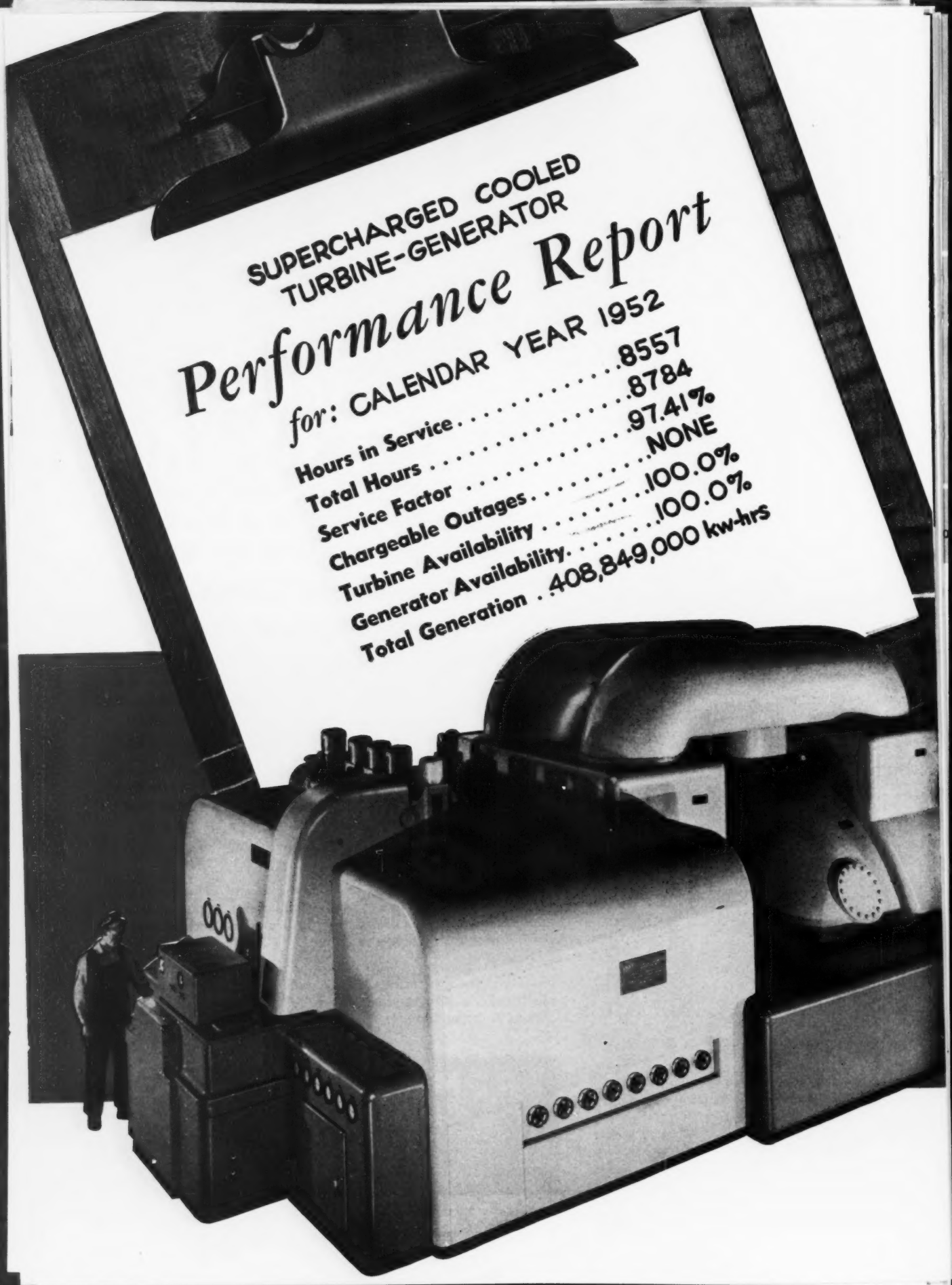
In any installation where exceptional resistance to aging, corona and ozone cutting plus low dielectric loss and excellent electrical stability in water are required, Rome RoZone deserves your confidence.

It Costs Less to Buy the Best

RoZone is approved and accepted by leading utilities, industrials and consulting engineers.

ROME CABLE
Corporation
ROME • NEW YORK
and
TORRANCE • CALIFORNIA

ROME CABLE ROME, N.Y.


SUPERCHARGED COOLED
TURBINE-GENERATOR
Performance Report
for: CALENDAR YEAR 1952
Hours in Service 8557
Total Hours 8784
Service Factor 97.41%
Chargeable Outages . . . . . NONE
Turbine Availability 100.0%
Generator Availability 100.0%
Total Generation . . 408,849,000 kw-hrs

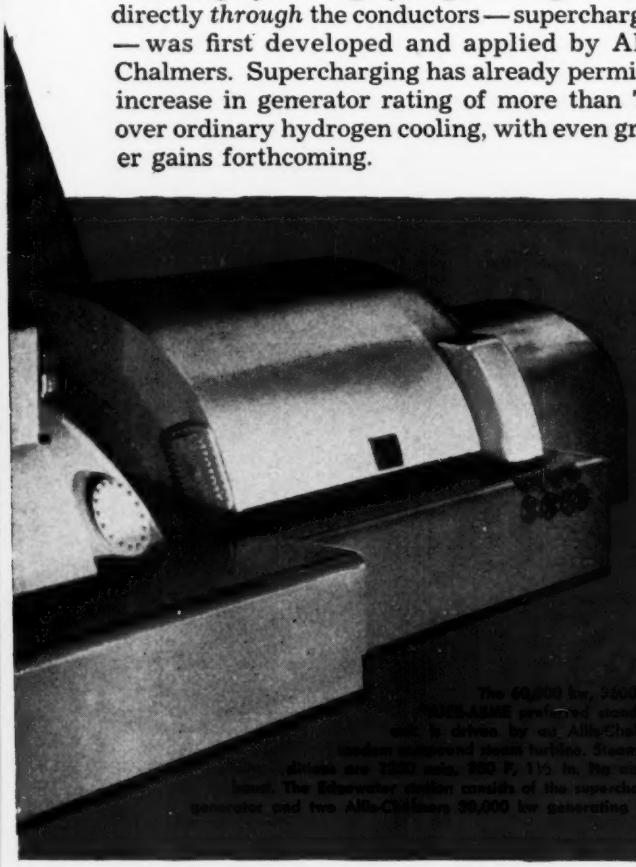
Availability for Duty: 100.0%!

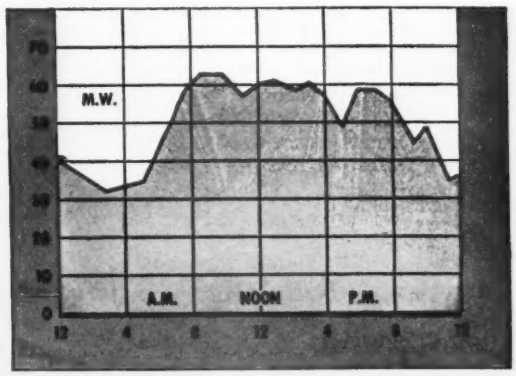
Supercharged Hydrogen Cooling — the greatest advance *ever* made in turbine generator design — has proved itself brilliantly in its first full year's commercial operation!

At left is the calendar year 1952 Performance Report on the Allis-Chalmers 60,000 kw steam turbine generator unit at the Edgewater station, Sheboygan, Wisconsin Power and Light Company. Both turbine and generator Availability were 100.0%, with on-the-line Service Factor over the entire year being 97.41%.

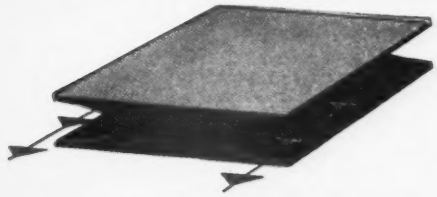
Cooling by driving hydrogen at high velocity directly *through* the conductors — supercharging — was first developed and applied by Allis-Chalmers. Supercharging has already permitted increase in generator rating of more than 70% over ordinary hydrogen cooling, with even greater gains forthcoming.

You get the real design advances *first* from Allis-Chalmers, builder of the world's widest range of power plant equipment. When planning a steam-electric power plant, your task will be simpler and results better if you deal with Allis-Chalmers. For complete literature on all products, call your nearest A-C office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3981





Typical daily load cycle of the Sheboygan supercharged unit. It experiences wide load fluctuations because it operates in parallel with base load hydro power. Supercharged units are suited for even this strenuous duty because of high part load efficiency and shorter, more thermally stable construction.

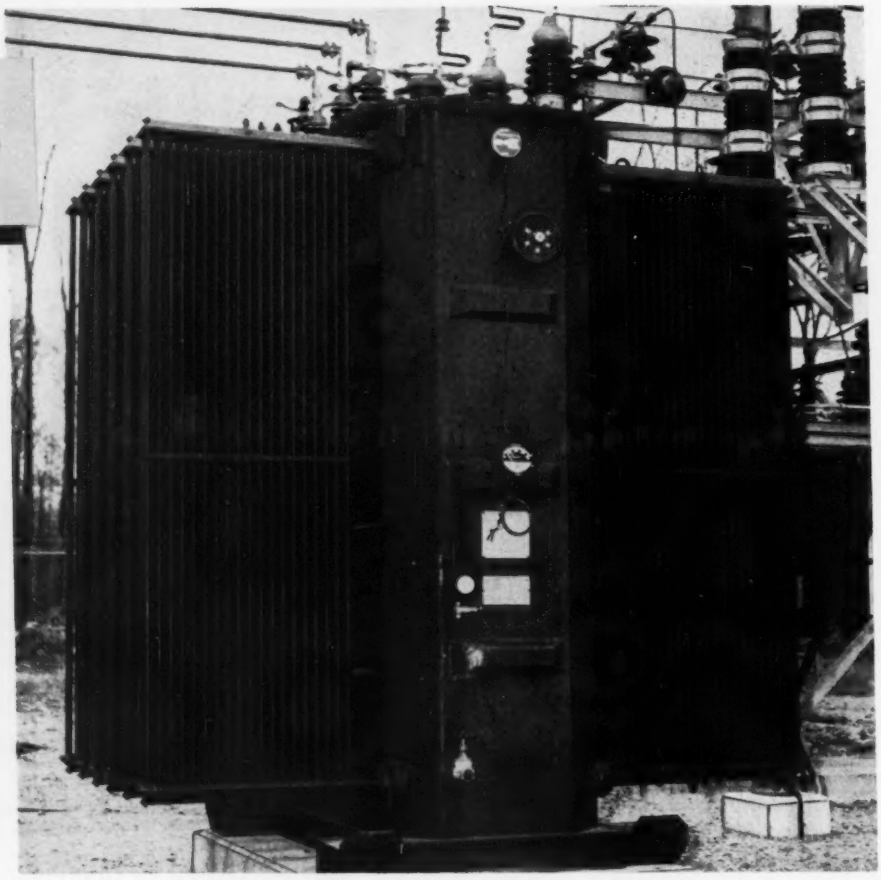


Cross sectional view, showing two turns of typical supercharged conductor construction. The cooling gas is in intimate contact with the copper, removing the heat right where it *originates*. The heat does *not* have to migrate through insulation and surrounding metal to reach vent ducts in the rotor teeth or body.

ALLIS-CHALMERS

FIRST with Supercharged Hydrogen Cooling!

Wagner
TRANSFORMERS
...the choice of leaders in industry



6000 kva Wagner Power Transformer installed at Studebaker Corporation's New Brunswick plant.

for today's jets – and tomorrow's cars...

Studebaker Corporation's jet engine parts plant, at New Brunswick, New Jersey, has been planned with an eye to the future. While the plant is now engaged in military production, it will eventually become eastern auto assembly headquarters for Studebaker.

The power distribution system is an example of this planning—the power load is divided between seven unit substations, all equipped with Wagner Transformers, that are spaced 160 feet apart down the center of the building. In addition to insuring an adequate power supply for the present, this arrangement assures a dependable source of power, from short secondary feeders, at the time of reconversion. No extensive changes will be necessary.

The entire system is fed through a 6000 kva Wagner Power Transformer located outside the plant, and served by Public Service Electric and Gas Company.

Wagner Transformers are an important part of the equipment of many industrial plants. In every case, they are adding to their reputation for unfailing service that helped to influence Studebaker to install Wagner Transformers.

Your nearby Wagner engineer can help you select the right transformer for *your* needs. Call the nearest of our 32 branch offices, or write us.

Typical Wagner Unit Substation Transformer, that powers one of the seven load centers in the plant.

Wagner Electric Corporation EST. 1891

WAGNER ELECTRIC CORPORATION
6456 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

WT53-11

INDUSTRIAL RELATIONS

Will Lead The CIO Again

Executive Vice President John W. Riffe, President Walter Ruether, and Secretary-Treasurer James B. Carey, left to right, wave their appreciation to convention delegates who reelected them without opposition to the Congress of Industrial Organization's top national offices at Cleveland, Ohio, recently. Ruether is president of the United Automobile Workers, Riffe is affiliated with United Steelworkers, and Carey is president of the International Union of Electrical, Radio & Machine Workers.

Pacific G&E Boosts Wages 3½%

Some 14,500 Pacific Gas & Electric Co clerical and physical workers received fatter paychecks in November —the result of a 3½% across-the-board wage increase obtained by the International Brotherhood of Electrical Workers, American Federation of Labor.

The general wage hike plus "inequity adjustments" that boosted wages even higher for 55 classifications of workers, plus fringe benefits will cost PG&E an additional $6 million a year.

The new contract, which expires Aug. 31, 1954, makes increases retroactive to Sept. 1, 1953. Originally, the union demanded 8% across-the-board hikes.

Inequity adjustments were made for some 3,500 workers, and their adjusted wages were used for computing the 3½% increase. Sample adjustments were: metermen, from $80.97 a week to $82.13; journeyman fitters, from $80.41 to $82.13; flume repairmen, from $74 to $79.34; voltage testers with one year of experience, from $79.34 to $86.60, and meter repairmen, from $78.52 to $82.13. Adjustments were made only for physical workers.

Among the fringe benefits was a provision that guarantees physical workers a 6-hour rest period after 16 hours or more of continuous work, provided the rest period extends into the next day's regular work schedule.

A 27% increase in pension plan payments was provided under a five-year agreement which begins Jan. 1, 1954. Under the new plan a journeyman lineman, for instance, who joined PG&E at 33 would get a pension of $214.87 a month instead of the $168.69 a month (exclusive of social security) he would receive under the old plan. The company contributes $2 for every $1 a worker puts in the pension fund.

LABOR BRIEFS

Science Research Associates, Inc, 57 West Grand Ave., Chicago, Ill., has developed a new test battery, FACT—Flanagan Aptitude Classification Tests, consisting of 14 critical job elements which have been found through on-the-job analyses to be the necessary skills of 18 different occupations. The occupations for which FACT has been validated are: Accountant, artist, business man, chemist, office clerk, draftsman, electrician, engineer, machinist, mathematician, mechanic, airplane pilot, plumber, printer, sales person, secretary, structural worker, and writer.

Carnegie Institute of Technology has announced a nine-week course called the Carnegie "Program for Executives," to be offered by the Graduate School of Industrial Administration. The program will begin on Mar. 8, 1954, and will continue through May 7. The purpose of the program is to help middle-management executives meet the broader and more complex requirements of senior level positions in their organizations.

Defense Mobilization Director Arthur S. Flemming has recently urged girls to enroll in engineering schools and asked the schools to recruit feminine students.

Long Island Lighting Co is sponsoring an "Engineering Technical Development Program" which is giving electric operating department employees an opportunity to prepare themselves for better positions in the company. Eligibility for the 12-week courses is determined by previous educational and work experience of the employee.

National Association of Railroad and Utilities Commissioners' Pres C. L. "Roy" Doherty has made the following appointments to the "Special Committee to Study Strikes and Work Stoppages in Regulated Public Utilities": Eugene S. Loughlin, Conn., chairman; Justus F. Craemer, Calif., and Benjamin F. Feinberg, N. Y.

Bureau of National Affairs, Inc, has just issued a booklet on "How To Develop An Understudy;" for copy, write BNA, 1231 24th St., N. W., Wash.

Electricity More Efficient Than LP Gas in Home Uses, Government Tests Show

For top-of-range cooking, LP gas ranges use 1.6 to 2.34 times as much heat energy as electric ranges. For oven cooking LP ranges use 1.89 to 2.34 times as much energy as electric. For the same performance, LP refrigerators use 7 to 18 times as much energy as electric refrigerators. As for water heating, energy used by LP gas is 1.49 to 2.22 times that required by electric heating.

These figures are quoted from Technical Bulletin No. 1073, "Comparative Utilization of Energy by Household Electric and Liquified Petroleum Gas Ranges, Refrigerators and Water Heaters," prepared by Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture. Copies are available at 20¢ each from the U. S. Government Printing Office, Washington 25, D. C.

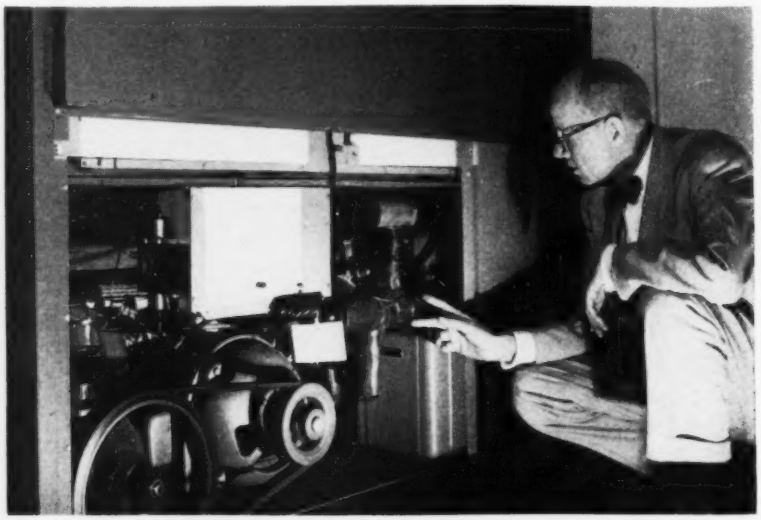
The tests on ranges and refrigerators reported in the bulletin covered the preparation of meals for a family of four—three meals for eight days, performed twice—on each of four electric and four LP ranges and four electric and two LP refrigerators. Light, medium and heavy meals were included in the test in the proportion found in a survey of meal patterns of farm families in California, Nebraska and Rhode Island. The same utensils were used in the tests on both kinds of equipment.

Faster in the Oven . . . For surface cooking the LP ranges averaged somewhat faster than the electric, but the electric ranges were faster in oven cooking. For combined surface and oven cooking the average was faster for the gas ranges, but it is notable that both the fastest and the slowest performers were gas ranges.

The spread in efficiency of energy utilization as between electric and gas refrigerators is wide, according to the tests reported. As against a use of 26,800 Btu per 24 hours by one gas refrigerator, an electric box used only 1,455 Btu for the performance in the same conditions, a ratio of 18.4 to one.

Because of the manner of heat application, the range in efficiency of energy utilization between electric and LP water heaters was not found to be as wide as in cooking and refrigeration. There was less variation in performance among the four electric heaters than among the LP units in the test. For 38-gallon draw-off of 160-deg F water in 24 hours the least efficient LP heater used 87,323 Btu as against 39,368 Btu for the most efficient electric unit, a ratio of 2.22 to one. The most efficient LP heater used 74,900 Btu as against 40,564 for the least efficient electric.

Btu efficiencies arrived at in the tests are not to be taken as comparisons of costs of operation. To calculate relative costs local rates for electricity and price and Btu content of LP gas must be applied to the heat quantities of the test results.



AIR-TO-AIR HEAT PUMP performed satisfactorily during first full season. Unit used 690 kwhr on cooling cycle and 11,680 kwhr on heating cycle. Auxiliary heaters used only 103 kwhr

Heat Pump Passes Utah Test

Satisfactory performance of an air-to-air heat pump in Salt Lake City is indicated by results of first year's operation during a near-normal winter. During the 1952-53 season, the heat pump supplied virtually all necessary heating for the installation. Auxiliary resistance heating of 10 kw had to supply only 0.88% of required heat, this during a 51-hr period when outside temperature was 17 F or less.

The unit is installed in home of W. A. Huckins, business development manager of Utah Power & Light Co (EW, Dec. 15, 1952, p 150). Installation includes a 5-hp, 230-v, single-phase compressor motor and ¾-hp and ½-hp motors driving fans. Auxiliary heaters consist of one 2-kw and two 4-kw resistance units which are controlled by individual thermostats. Automatic dampers in air intake and exhaust ducts are arranged to recirculate internal air to reduce load on heat pump. Intake and exhaust grills on outside house wall are separated by 20 ft to prevent recirculation of air in external system.

Metering for the installation is arranged so that individual consumptions and demands may be determined for heat pump, auxiliary heaters, and the remainder of electric load in the house.

During the past heating season, 4,950 degree-days were recorded, only 9% less than the 5,555 degree-days considered typical. Temperatures at or below 17 F were experienced for 51 hours, compared to an expected

274 hours for a normal winter.

Resistance heaters used 103 kwhr during this 51-hour period. Maximum heater demand for this use was 6.6 kw and was recorded during the week ending Nov. 29, 1952. The heat pump itself consumed 11,680 kwhr operating on the heating cycle and 690 kwhr on the cooling cycle. Kwhr use per degree-day for the heating season was 2.359. Average cost of energy for both heating and cooling was determined at 1.64¢ per kwhr, with $203.24 the total cost.

New Inducements in EEI '53 Prize Awards Contests

Any utility with a noteworthy achievement in 1953 in promoting electric ranges, water heaters, commercial cooking equipment, farm electrification, industrial electrification, planned lighting, automatic washers and dryers, and special activities in the home service department, has a better chance now than ever before to line up with the award winners at the Edison Electric Institute Sales Conference in Chicago next Spring.

The George A. Hughes awards for promotion of electric ranges, water heaters and commercial cooking equipment will be made in two classifications for 1953 to encourage entries from small and medium size companies; one for companies with 250,000 total meters or more, and one for companies with under 250,000 total meters. To encourage these companies to enter the Laura McCall contests for home service achievements, there is also a new dividing line: large departments with ten or more assistants, and small departments with not more than nine assistants. Entering the Frank Watts contest has also been simplified; a single project in farm electrification will qualify for entry.

Chicago Plays Up Electric Bedding

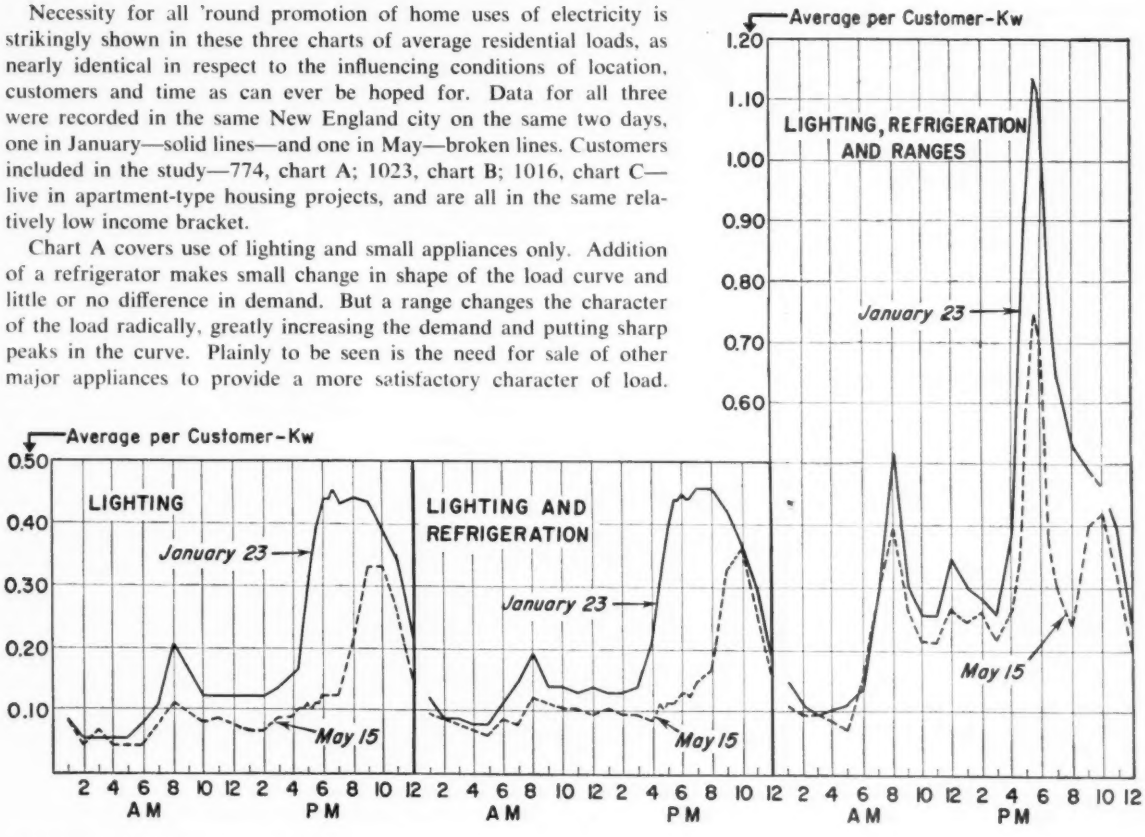
Chicago Electric Association is sponsoring the installation of special window displays, beginning Nov. 10, featuring electric bedding in the stores of 42 dealers who are participating in the association's fourth annual electric bedding campaign. The displays, created by A.B.C. Mercantile Display Co, are installed in windows at no cost to dealers.

Radio advertising in support of the campaign consists of spot announcements on morning and afternoon shows on WBBM, started Nov. 9 and will continue for six weeks through Dec. 19.

Here's the Case for Well Rounded Load Building

Necessity for all 'round promotion of home uses of electricity is strikingly shown in these three charts of average residential loads, as nearly identical in respect to the influencing conditions of location, customers and time as can ever be hoped for. Data for all three were recorded in the same New England city on the same two days, one in January—solid lines—and one in May—broken lines. Customers included in the study—774, chart A; 1023, chart B; 1016, chart C—live in apartment-type housing projects, and are all in the same relatively low income bracket.

Chart A covers use of lighting and small appliances only. Addition of a refrigerator makes small change in shape of the load curve and little or no difference in demand. But a range changes the character of the load radically, greatly increasing the demand and putting sharp peaks in the curve. Plainly to be seen is the need for sale of other major appliances to provide a more satisfactory character of load.



significant statistics of

Reheat Boilers

for period 1947 through 1953

Number of Units Ordered	136
Number of Units in Service	60
Total Capacity—KW	15,750,000
Capacity in Service—KW	5,755,000
Capacity—Controlled Circulation Reheat Boilers—KW	6,260,000
Capacity fired by Tilting Tangential Burners—KW	14,380,000

B-641A

COMBUSTION ENGINEERING

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

BOILERS, FUEL BURNING AND RELATED EQUIPMENT; PULVERIZERS; AIR SEPARATORS AND FLASH DRYING SYSTEMS; PRESSURE VESSELS; AUTOMATIC WATER HEATERS; SOIL PIPE

MANUFACTURERS & MARKETS

Color Television Publicity . . .

. . . is cited by manufacturers as a major cause of consumer reluctance to purchase black and white sets

Publicity given to color television has been cited by television manufacturers as a chief cause of consumer reluctance to buy black and white sets. Unseasonable weather and year-end inventories have also been mentioned as factors contributing to the industry's current woes. As a result of these market disturbances, leading television manufacturers have been forced to furlough workers, cut production, and slash prices.

To date, General Electric Co has laid off 200 workers at the Syracuse, N. Y., plant and furloughed 100 persons at Auburn, N. Y. GE has not made any price cuts.

Westinghouse Electric Corp has reported that no employees have been laid off at its Metuchen, N. J., plant, which handles the bulk of the company's TV production. But, a Westinghouse spokesman disclosed that if production cutbacks are necessary, the Sunbury, Pa., plant will be affected.

Reports Price Cuts . . . Westinghouse has announced price cuts ranging from 28 to 40% on its line of six 21-in. screen models. The six models now range in price from $199.95 to $299.95 as compared with the former range of $279.95 to $499.95.

Sylvania Electric Products, Inc, idled 200 workers when it shut one of seven television assembly lines at its Buffalo, N. Y., plant. The company also laid off 100 workers at its Seneca Falls, N. Y., plant, and plans to furlough 150 at its Ottawa, Ohio, plant. Sylvania has not cut prices.

Radio Corp of America laid off 740 employees: 500 at its Indianapolis plant and 240 at the Camden, N. J., plant. An RCA spokesman said that the furloughs were the result of slackening of sales caused by unseasonable weather. RCA contemplates no price cuts on television sets.

However, consumers are in for a big surprise if they expect mass production of color television at reasonable prices in 1954.

Although the Federal Communications Commission approval of color television is expected about the first of the year, the market will not be flooded with color television sets.

RCA's LANCASTER, PA., PLANT is where silk screen technique is used to apply minute phosphor dots to glass screen of picture tube for color TV. To produce a full color picture image, three applications of phosphor substance are made—one each for red, blue, and green

Color TV Production Plans . . . Although Westinghouse, GE, and Sylvania expect to eventually market color television sets in the $800-$1,000 price range, each company is going its own way on production.

Shortly after FCC approves color TV, Westinghouse will be ready to market a 12½ in. screen model on a national level.

GE's plans call for production of limited quantities of a similar sized screen set by mid-1954. GE announced it will make 15-in. color TV picture tubes available to set manufacturers in limited quantities early in 1954. Pilot production of the tubes will begin in January. Sylvania is now operating a pilot production line at its Seneca Falls plant. RCA has not revealed its production plans for 1954.

Plans Distribution Center

Plans to erect an office building and distributing center for the New England area at Needham, Mass., have been announced by Union Carbide & Carbon Corp. The firm reports it has contracted to buy a plot in an industrial center there and will use the property to consolidate several company locations in the area. Occupancy is planned for late next year.

FOSTER WHEELER CORP'S new $5-million fabricating plant at Mountaintop, Pa., is shown in this aerial photograph. X-Ray Building (upper right) houses 2 million-v X-Ray generator

Foster Wheeler's New Plant...

. . . at Mountaintop, Pa., starts limited operations. The $5-million project gets its power from Pennsylvania P&L

Foster Wheeler Corp has started limited operations at its new, $5-million Mountaintop, Pa., plant, which will manufacture pressure vessels. The 87,500-sq ft plant, part of an $8-million expansion and re-tooling program, is expected to begin full operation by Jan. 1.

Supplies Power . . . Pennsylvania Power & Light Co will furnish the plant with approximately 3,500 kva daily on two 66-kv lines. This voltage will be stepped down by Foster Wheeler to 4,160 v by two 2,500-kva transformers. It then will be distributed to four power centers within the plant, where it is stepped down to 480 v for power circuits. Lighting is fed from a power center having no heavy rotating equipment connected and is distributed at 120 v, 3 phase.

The plant's major tools include:

1. An 8,000-ton hydraulic beam press weighing over 3,000,000 lb for bending plate up to 8-in. thick. into half-shells.

2. A plate handling device that positions the huge slabs of preheated steel, which will be formed in the beam press.

3. An automatic shielded arc welder for welding together half-shells up to 12 ft in diam.

4. A series of mobile, high-speed radial drills that may be stationed anywhere along a 230 ft stretch of raised track.

Located about 550 ft from the main building is a one-story structure with 4-ft thick walls made of reinforced concrete. This houses a 2 million v Van de Graaf X-ray generator capable of penetrating steel 12 in. thick for detecting flaws in weld metals. Location and construction of the building guard against the possibility of escaping rays from the generator.

SALES ASSIGNMENTS

COMPANY STAFFS

Square D Co, Milwaukee, Wis., has named James L. Thompson its regional sales manager to supervise sales activities in the Chicago-Rockford area and most of Indiana. With Square D since 1946, Thompson formerly was assistant regional manager.

Reliance Electric & Engineering Co, Cleveland, has appointed J. A. Ritt as field sales representative in its new sales office at Duluth, Minn. Ritt, who will serve as a sales engineer throughout the northern Minnesota industrial area, will report to K. H. Sievers, Minneapolis branch manager. For the past year and a half, Ritt has been assigned to sales and engineering work at the company's headquarters in Cleveland.

REPRESENTATIVES

Porcelain Products, Inc, Parkersburg, W. Va., has named James B. Penry, Box 1345, Knoxville, Tenn., as its high voltage representative in the eastern section of Tennessee.

MEETINGS CALENDAR

Interstate Power Club
Hotel Martinique, New York, Dec. 7.

Eastern Joint Computer Conference-Exhibition
Sponsored by Institute of Radio Engineers, Association for Computing Machinery, and American Institute of Electrical Engineers, Statler Hotel, Washington, D. C., Dec. 8-10.

Edison Electric Institute
Financing and Investor Relations Committee, EEI Headquarters, New York, Dec. 9; Commercial Cooking and Water Heating Committee, Tutwiler Hotel, Birmingham, Ala., Dec. 10-11; Industrial Power and Heating Section, Sheraton Hotel, St. Louis, Dec. 10-11; EEI-AGA Accounting Employer Relations, Hotel Cleveland, Cleveland, Ohio, Dec. 14; Commercial Electrical Space Heating and Air Conditioning Committee, Canton, Ohio, Dec. 17-18; Industrial Relations Committee, EEI Headquarters, New York, Dec. 17; Accident Prevention Committee, Hotel Statler, Boston, Jan. 18-19; Industrial Relations Committee Joint Meeting with Personnel Administration Section, Southeastern Electric Exchange and Southwestern Personnel Group, Hotel Roosevelt, New Orleans, La., Jan. 21-22; EEI-AGA Taxation Accounting Committee, Arlington Hotel, Hot Springs, Ark., Jan. 27-29; Transmission and Distribution Committee, Hotel Cleveland, Cleveland, Ohio, Feb. 9-10

National Rural Electric Cooperative Association
Annual Convention, Dinner Key Auditorium, Miami, Fla., Jan. 11-14.

***Doble Client Conference**
Sponsored by Doble Engineering Co., Sheraton Plaza Hotel, Boston, Jan. 11-15.

American Institute of Electrical Engineers
Winter General Meeting, Statler Hotel, New York, Jan. 18-22; Conference on Feedback Control, Claridge Hotel, Atlantic City, N. J., April 22-23; Northeastern District Meeting, Schenectady, N. Y., May 5-7; Summer General and Pacific General Meeting, Hotel Biltmore, Los Angeles, June 21-25; Conference on Telemetering, Morrison Hotel, Chicago, May 24-26.

***Pennsylvania Electric Association**
Winter Meeting, Transmission-Distribution Committee, Lord Baltimore Hotel, Baltimore, Feb. 11-12.

National Electrical Manufacturers Association
Spring Meeting, Edgewater Beach Hotel, Chicago, March 8-11.

Southeastern Electric Exchange
21st Annual Meeting, Boca Raton Hotel, Boca Raton, Fla., March 22-24.

American Power Conference
Sherman Hotel, Chicago, March 24-26.

American Society of Mechanical Engineers
Semi-Annual Meeting, William Penn Hotel, Pittsburgh, June 20-24.

*Addition this week.

Cross-country "jogging" proves this transformer can *take it!*

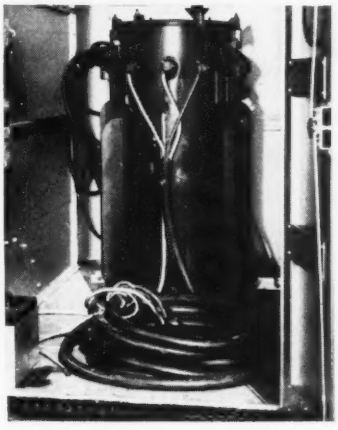
Brockton-Edison's trailer-mounted "CSP®" Transformer gets more jolts and bumps in one day of cross-country service than the average transformer receives in a lifetime. Yet this "CSP" Transformer has performed perfectly every time it has been used to maintain service during emergency or routine transformer change-outs.

Brockton-Edison used "Westinghouse" for their ingenious trailer rig, because they needed an extra-tough transformer for such rugged service. They chose a "CSP" Transformer because its built-in breaker eliminates the necessity for any separately mounted protective devices. All they have to do is make the connection and use the "CSP" Breaker to pick up or disconnect the load.

"CSP" Transformers can take it, whether mounted on a pole or in a trailer, even under the most adverse conditions. Why not prove to yourself that Westinghouse "CSP" Transformers can cut distribution, installation and maintenance costs. Ask your Westinghouse representative for a copy of B-4247-B, *Transformer Costs . . . and their relation to Profits.* Or write to Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pennsylvania.

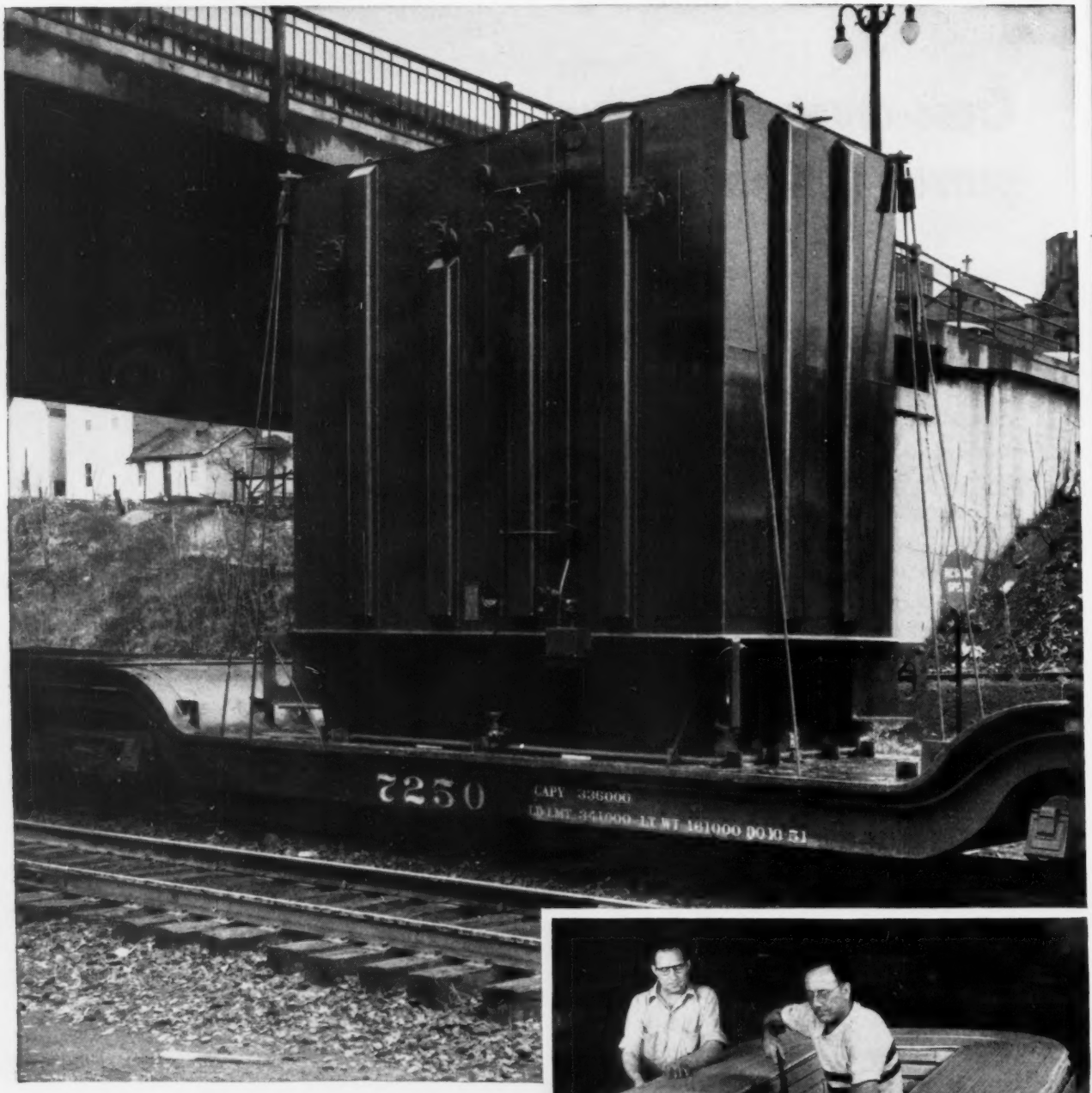
J-70662-A

Even after miles of hauling over bumpy, rural roads, this rugged "CSP" Transformer gives dependable service. Only normal external transformer connections need be made. The "CSP" Breaker is used to pick up the load.

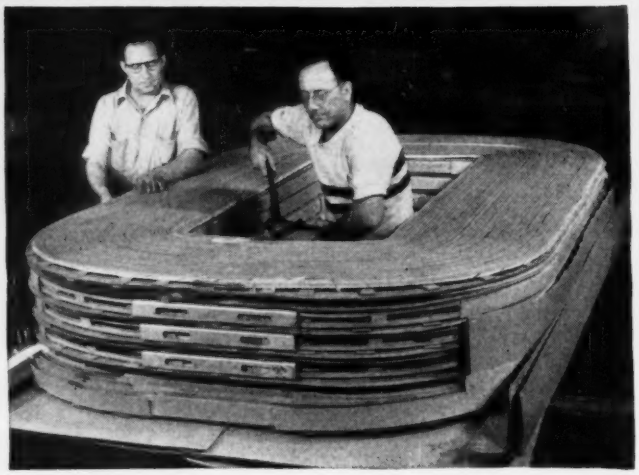


This 37.5-kva "CSP" Transformer fits compactly into Brockton-Edison's movable trailer because its built-in protection eliminates the need for separate protective devices and excess wiring. This ingenious arrangement simplifies change-outs, with fast service any time . . . anywhere.

YOU CAN BE SURE...IF IT'S Westinghouse



190,000-KVA "FORM-FIT" UNIT enroute to St. Claire Station on Detroit-Edison System . . . the highest capacity unit ever built, but still smaller, physically, than other units on this user's system rated only 145,000 kva!



BETTER SURGE STRENGTH is inherent in "Form-Fit" construction which uses fewer coils of large area. This practice results in greater coil-to-coil and less coil-to-ground capacitance, giving much better surge distribution.

190,000-kva transformer clears low bridge with room to spare!

. . . "Form-Fit" design made it possible

For years, engineers have recognized that shipping facilities were the prime limitation on transformer capacity. Not too long ago, a transformer rated 190,000 kva would have been impossible to transport.

But this record-capacity Westinghouse "Form-Fit" Transformer was shipped in one piece, factory-assembled, from Sharon, Pennsylvania, to Detroit, Michigan. Since no split tank was required, installation was simplified.

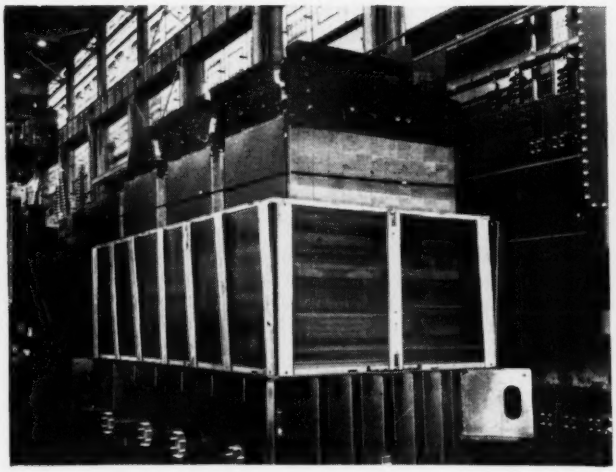
Statistically, "Form-Fit" has cut the over-all size of Westinghouse Power Transformers 20%, reduced occupied ground area 15%. These reductions make possible shipment of even greater single unit capacity in the future with corresponding savings in installation time and expense.

In addition, "Form-Fit" transformers will better absorb the shocks of handling and shipping—the stresses of short circuits and electrical surges—without damage. The core surrounds, supports and protects the coils, giving added mechanical and electrical strength. The tank fits snugly over the laminations—braces the assembly still further.

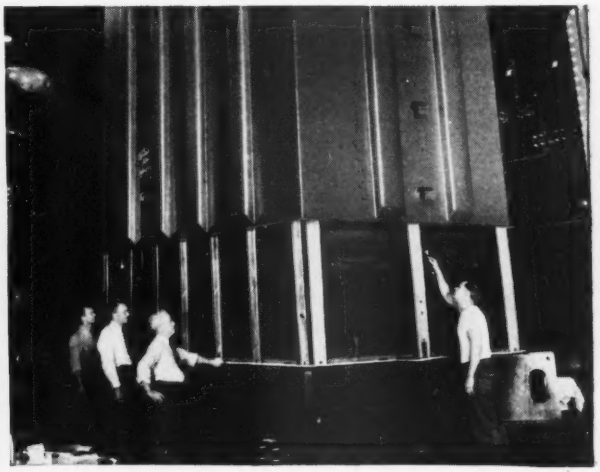
These facts are only part of the story of "dependability at lower cost" offered by Westinghouse Power Transformers. Information on other features like the superior insulation structure, the efficient cooling system, is in the hands of your local Westinghouse representative. He'll be glad to discuss it with you; or write direct for booklet B-4142-A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70679

YOU CAN BE SURE... IF IT'S Westinghouse



BETTER MECHANICAL STRENGTH is added to the coil assembly by the Hipersil® laminations, which are clamped by the inside of the tank. Possibility of internal damage from electrical and mechanical forces is greatly reduced.



BETTER THERMAL CHARACTERISTICS are obtained by use of vertical pancake coils. Vertical cooling ducts form natural flues . . . ideal for forced oil cooling without special devices for directing flow.

Rule U-50 Change Asked . . .

. . . by SEC which will amend competitive bidding on securities sold by registered holding companies and subsidiaries

The Securities and Exchange Commission recently announced another proposal to change existing rules affecting regulated public utilities. It's another sign of the change in administrations and the de-emphasis of federal regulation by the Eisenhower Administration in favor of increasing state and local responsibility.

Amend Rule U-50 . . . SEC now wants to amend rule U-50 under the Public Utility Holding Company Act of 1935, which requires—with certain exceptions—competitive bidding for the purchase or underwriting of securities issued or sold by registered holding companies and their subsidiaries.

If finally adopted as proposed, the issue and sale of its own securities by a subsidiary of a registered holding company would be exempt from SEC competitive bidding rules, if the sale has been approved by the state regulatory commission which has jurisdiction over the subsidiary.

The exemption would apply only to subsidiaries in holding company systems which are subject to SEC regulation under the 1935 Holding Company Act. While exact figures are not available, a large amount of the heavy financing over the last five or ten years was on the subsidiary level.

Rule U-50 Effective Since '41 . . . Rule U-50 has been in effect since 1941, when it was adopted after lengthy hearings by the SEC. Prior to that time, no exemptions were made from the policy expressed in the Holding Company Act that all public utility stock and bond offerings should be sold through competitive bidding.

The 1941 exceptions to this rule permitted, for example, a utility company to sell securities pro rata to existing stockholders, and issue of any bond, note or other evidence of debt with a maturity of 10 years or less to a commercial bank or an insurance company but not for resale to the public.

The Holding Company Act language itself provides for exemption from the competitive bidding requirements by SEC—through rules, regulations or order—of the sale of a utility subsidiary securities if approved by a state commission. But under present practice, each exemption made under this statutory provision has been granted by order only, requiring substantially the same degree of SEC regulation as non-exempted issues.

State Commission Deciding Factor . . . Under the proposed change, however, compliance with SEC's competitive bidding rules automatically becomes unnecessary when the appropriate state commission approves a security sale.

SEC is asking all interested parties to submit data, views, and comments to the Secretary, 425 Second St., N. W., Washington 25, D. C., until Dec. 31.

After these views and comments have been received and considered the SEC will determine whether it is appropriate in the public interest to hold a public hearing on the proposals before further consideration by the commission.

Benefits of Combination Utility Noted

Explaining that "energy is our business," H. R. Searing, president of Consolidated Edison Co of New York, Inc, told a group of security analysts last month that a combination utility company "makes for the greatest economic and social good."

Selling energy in its various forms—gas and electricity, and in his company's case, steam—"makes it possible for the public to get its utility services at lowest possible prices," he said.

"We think the customer is better off, for he will generally end up with the service that is best fitted to his needs, for the particular job he wants done," Searing added in discussing the benefits of the combination company.

The Con Edison president also pointed out that street openings are coordinated by one group, resulting in less inconvenience to the public. And, he said, another benefit of the combination company is that employees are better and more versatile workers.

Searing's remarks were delivered Nov. 19 before about 150 analysts at the second annual Utility Analysts Day sponsored by Con Edison. Various aspects of the company's operations and management were outlined by other officers of the company.

Harland C. Forbes, executive vice president, reported that electric revenues for Con Edison for the 12 months ended Sept. 30 showed an increase of $24 million. Of this amount, he said, $11 million resulted from rate increases permitted by the Public Service Commission and the remainder from the growth of business. "The earnings available for the common stock for that period amounted to just over $3 a share, first time earnings of this magnitude have been achieved since 1933," Forbes noted.

Forbes also told the analysts that Con Edison's construction budget for next year will be about $80 million, compared with about $90 million for the current year.

H. R. SEARING

One of the features of the program arranged by Con Edison for the visiting analysts was a tour of its new Astoria steam plant.

FINANCIAL BRIEFS

Wellington Fund has invested 8.85% of its total net assets in the public utility industry at Sept. 30: Its largest investment in any one industry. During the third quarter of 1953, the fund purchased the following common shares of electric companies: 5,000 of American Gas & Electric; 6,000 of Central Illinois Public Service; 2,000 of Duquesne Light; 9,000 of General Public Utilities; 5,000 of Public Service Co of Indiana; and 5,400 of Rochester Gas & Electric.

Action of Puget Sound Power & Light Co in breaking off negotiations for merger into Washington Water Power Co has been applauded by the board of trustees of the Seattle Chamber of Commerce. A resolution passed by the trustees commended officers and directors of the utility for their decision "to preserve the company as a permanently independent public utility serving this area, in the growth of which Puget has played such an important part." It concurred in the statement of Gov Arthur B. Langlie that company's decision is in the best interests of the people of western Washington.

Duke Power Co will pay Dec. 21 a quarterly common stock dividend of 40¢ a share and an extra 25¢. Company had paid 37½¢ a share in previous quarters in 1953 for a total of $1.77½, which compares with $1.50 in 1952 on present stock outstanding.

Portland General Electric Co has placed privately through Blyth & Co $8 million 4⅛% first mortgage bonds due 1983 . . . **Southern Nevada Power Co** has placed $1.8 million of 4¾% first mortgage bonds due 1983 with two insurance companies.

Southern Maryland Electric Corp has asked Maryland Public Service Commission to reduce rates $90,000 annually.

Public Service Co of New Mexico has been given Public Service Commission approval to increase electric rates $312,000 annually.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1953									
Nov. 25	**3.10**	**3.17**	**3.38**	**4.17**	**4.37**	**4.65**	**5.18**	**5.60**	**5.74**
Nov. 19	3.10	3.14	3.36	4.18	4.38	4.64	5.22	5.64	5.77
END OF QTR.									
3rd 1953	3.30	3.33	3.54	4.35	4.52	4.83	5.36	5.97	6.01
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.15	4.06	4.22	4.59	4.98	5.33	5.62

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Alabama Power	12	Oct.	$12,704,205	$11,771,524	$....	$....
Central Illinois Light	12	Oct.	3,434,888	2,874,389	3.26	2.64
Detroit Edison, consolidated	12	Oct.	21,274,827	16,160,445	2.00(a)	1.61(a)
General Public Utilities, consolidated	12	Sept.	21,729,402	17,591,905	2.39(b)	1.93(b)
Georgia Power	12	Oct.	12,517,053	11,833,570	....	....
North American Co, consolidated	12	Sept.	11,704,670	11,048,455	1.37	1.29
Oklahoma Gas & Electric	12	Oct.	6,078,366	5,654,817	1.95(c)	1.98(c)
Portland General Electric	12	Oct.	3,770,267	3,746,505	2.51(e)	2.68(e)
Southern Co, consolidated	12	Oct.	21,990,060	20,206,775	1.21(f)	1.18(f)
Southern Indiana Gas & Electric	12	Oct.	2,150,102	1,831,019	2.17(g)	2.07(g)
Western Light & Telephone	12	Sept.	1,229,614	963,325	2.55(h)	2.34(h)

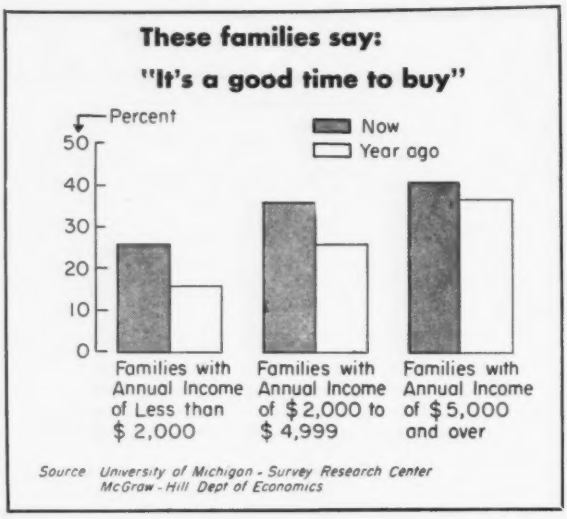
Notes—(a) Based on 10,643,198 shares in 1953 and 10,009,608 shares in 1952; (b) Based on 9,098,640 shares presently outstanding; (c) Based on 2,653,140 shares in 1953 and 2,411,945 shares in 1952; (e) Based on 1,500,000 shares in 1953 and 1,395,833 shares in 1952; (f) Based on 18,087,643 shares in 1953 and 17,076,669 shares in 1952; (g) Based on 799,167 shares in 1953 and 685,000 shares in 1952; and (h) Based on 391,778 shares in 1953 and 325,841 shares in 1952.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF NOVEMBER 26—DECEMBER 2			
Bonds			
Florida Power Corp—1st mtg 3⅝% due 1983	$10,000	101.935%	3.52%
Monongahela Power—1st mtg 3⅝% due 1983	10,000	102.31	3.50
Columbus & Southern Ohio Electric—1st mtg 3⅝% due 1983	10,000	102.31	3.50
Iowa Power & Light—1st mtg 3⅜% due 1983	8,500	101.42	3.30
Debentures			
Quebec Hydro-Electric Commission—due 1978	$50,000(b)		
Common Stock			
Virginia Electric & Power—558,946 sh	$15,161	$27.125	5.16%
SCHEDULE FOR DECEMBER—JANUARY			
Bonds			
Imperial Irrigation District, Calif—electric revenues due 1957–84	$10,000	.....	Dec. 8
Philadelphia Electric—1st mtg	20,000	.....	Dec. 10
Nashville, Tenn—electric revenues due 1957–84	3,000	.....	Dec. 15
Appalachian Electric Power—1st mtg due 1984	20,000	.....	Jan. 11
Public Service Co of Indiana—1st mtg due 1984	25,000	.....	Jan. 12
Consolidated Edison Co of New York—1st mtg	35,000	.....	Jan. 12
Ohio Edison—1st mtg due 1984	30,000	.....	Jan. 19
Central Illinois Electric & Gas—1st mtg	4,000	.....	.....
Upper Peninsula Power—1st mtg	1,000	.....	.....
Debentures			
Detroit Edison—debs (to be offered commonholders on the basis of $100 principal amount of debs for every 25 shares of common held)	$43,358	.....	.....
Preferred Stock			
Duquesne Light—100,000 sh $50 par	$5,000	.....	Dec. 7
Narragansett Electric—150,000 sh $50 par	7,500	.....	Dec. 16
Central Illinois Electric & Gas—15,000 sh $100 par	1,500	.....	.....
Common Stock			
Consumers Powers—679,436 sh (to be offered commonholders on a 1-for-10 basis, record Jan. 7 to expire Jan. 22; employees will be given right to subscribe)	.....	.....	.....
Ohio Edison—527,830 sh (to be offered commonholders on 1-for-10 basis, record Jan. 14 with an oversubscription privilege)	.....	.....	.....
Upper Peninsula Power	500	.....	.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Bonds			
Southwestern Public Service—1st mtg	$12,000(e)	.....	.....
Houston Lighting & Power—1st mtg	25,000	.....	.....
Public Service Co of Colorado—1st mtg	15,000	.....	.....
Brazos River Authority, Tex.—electric revenues	66,000	.....	.....

Notes—(e) Estimated; and (b) Indefinitely postponed.

ELECTRICAL BUSINESS OUTLOOK



Consumers Optimistic

University of Michigan survey reveals that people are still willing to spend money for goods

Consumers are likely to go on buying at high levels in the near future. That's the highly significant finding of a recent survey of consumer buying attitudes. The survey was made by the Survey Research Center at Michigan University, which has been making successful studies of consumer attitudes over the past several years.

This finding is good news for electric utilities—in more ways than one. Continued high sales of electric appliances now seem likely in the first half of 1954. That means residential electric power consumption will continue to grow. And, in addition, strong consumer demand next year would retard any business decline.

However, news from the survey is not all good. Some of it could even be called alarming. Although more people think this is a good time to spend their money than thought so last year (See chart), many people have also decided that we will have some kind of a recession or depression in the near future. This pessimism may offset some of the good buying intentions of the optimists.

What Consumers Think . . . Here's a rundown on the survey's key results:

1. More consumers said that this is a good time to buy than in any recent survey. (Surveys were taken at the end of 1951, in early 1952, and at the end of 1952.) And past surveys have proved to be excellent indicators of how consumers would actually spend their money.

2. Consumers had some reasons for thinking this a good time to spend their money. They are generally satisfied with their financial status. They think prices will remain stable for a while. And they think the economy will be pretty steady over the next year or so.

3. A smaller percentage of consumers report that they are making more money than they were at the beginning of the year. At the end of 1952, 38% said that they were earning more than at the beginning of that year. Now the number is down to 29%. Somewhat more people now report that they are financially worse off than in January.

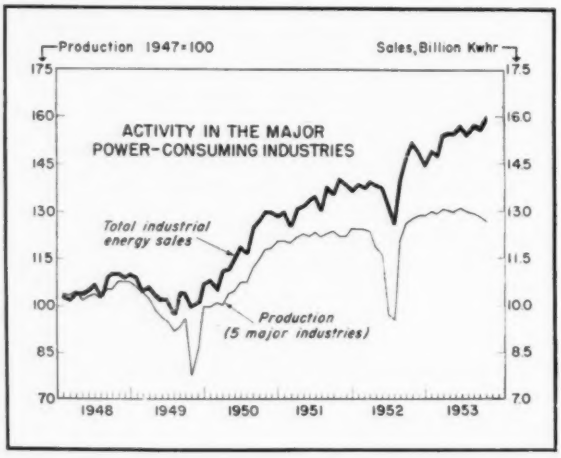
4. Many more pessimists appeared than in the previous three surveys. Fully 22% of the people interviewed think that depression and unemployment will dominate the business picture over the next five years. Only 8% thought that a year ago. And 46% take a generally pessimistic attitude toward the next five years, compared to 28% a year ago. The number of optimists has been sharply reduced.

5. But families with larger incomes (over $5,000 a year) are markedly more optimistic about the future than families with lower incomes. This may be a key finding of the survey, as families in this income class buy a major share of durable goods—appliances, automobiles, and others.

More Pessimists This Year . . . All these findings contribute to making a picture of consumer buying over the next few months. The common feeling that this is a good time to buy is a strong positive factor. But it is balanced by the big growth in pessimists. People who think the business outlook is bad are less likely to spend their money.

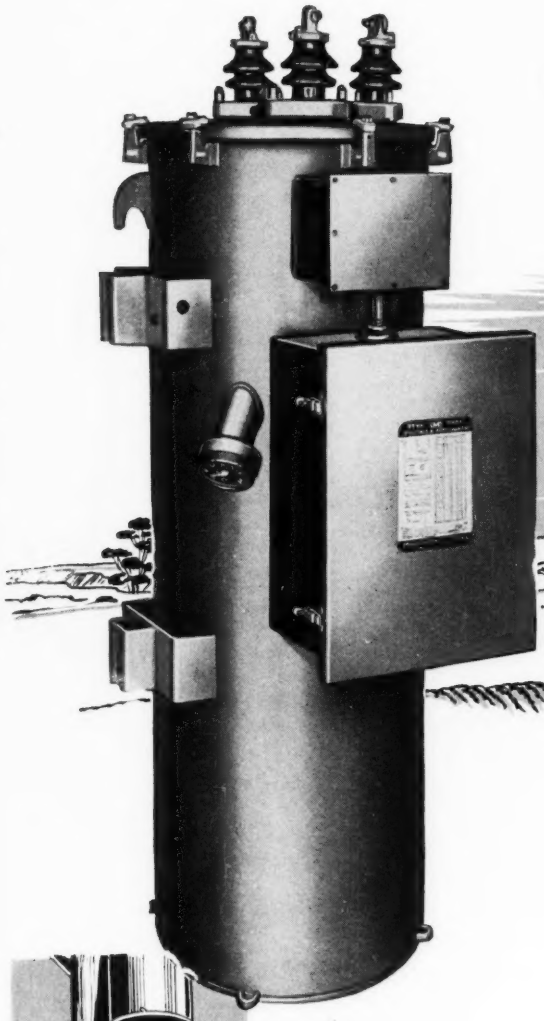
On balance, the survey's findings are a good sign for business in early 1954. They indicate high sales of durable goods in the next few months. But they also raise a lot of doubts about later in the year. If the number of pessimists about the business outlook should increase—or if their pessimism leads them to cut their buying—then sales might drop off sharply later in the year.

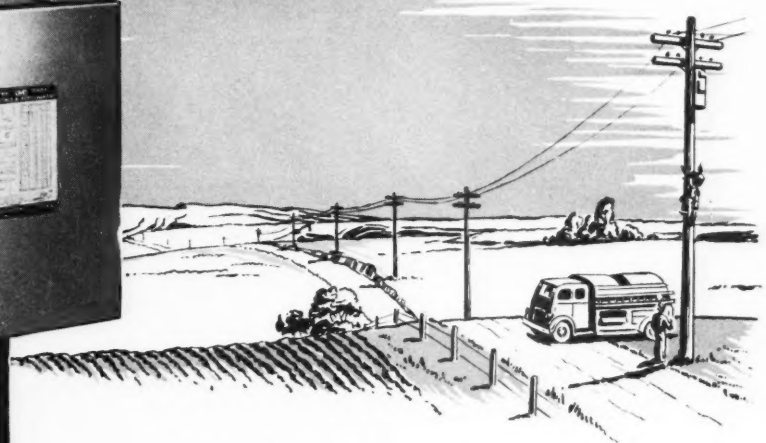
There's one extra note in the survey that should interest electric utilities. People in general think this is a better time to buy appliances than automobiles. So the appliance outlook for the next few months, based on the survey, is extra good.

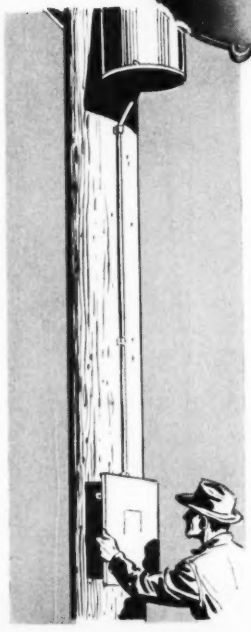


CUT INSTALLATION TIME with

POLE TYPE STEP VOLTAGE REGULATORS







Control cabinet contains all control equipment. Hinged front panel is gasketed and is secured by two toggle clamps affording both weather-proofing and accessibility. Cabinet is bolted to tank wall and may be removed for mounting at the base of the pole. Terminal Board easily accessible, permits front wiring of all incoming control wire, yet is easily removed for access to rear panel control equipment wiring.

Construction crew time is real money these days . . . but now you can save much of that valuable time when you install the new Moloney Pole-Type Step Voltage Regulators. These *all-new* regulators can be hung in much less time for they need no external power supply for installation and calibration of the automatic control equipment.

This outstanding Moloney Regulator, engineered to solve real operating problems is factory shipped for immediate installation . . . needs only to be connected to the line and calibrated to proper value. After the voltage regulating relay is balanced, the regulator can be switched to automatic for years of dependable service.

Specify these *all-new* Moloney Pole-Type Step Voltage Regulators . . . they are built with all the care and precision that have been the mark of Moloney for over fifty years. Specify the finest . . . make it Moloney *all along the line.*

ME53-50

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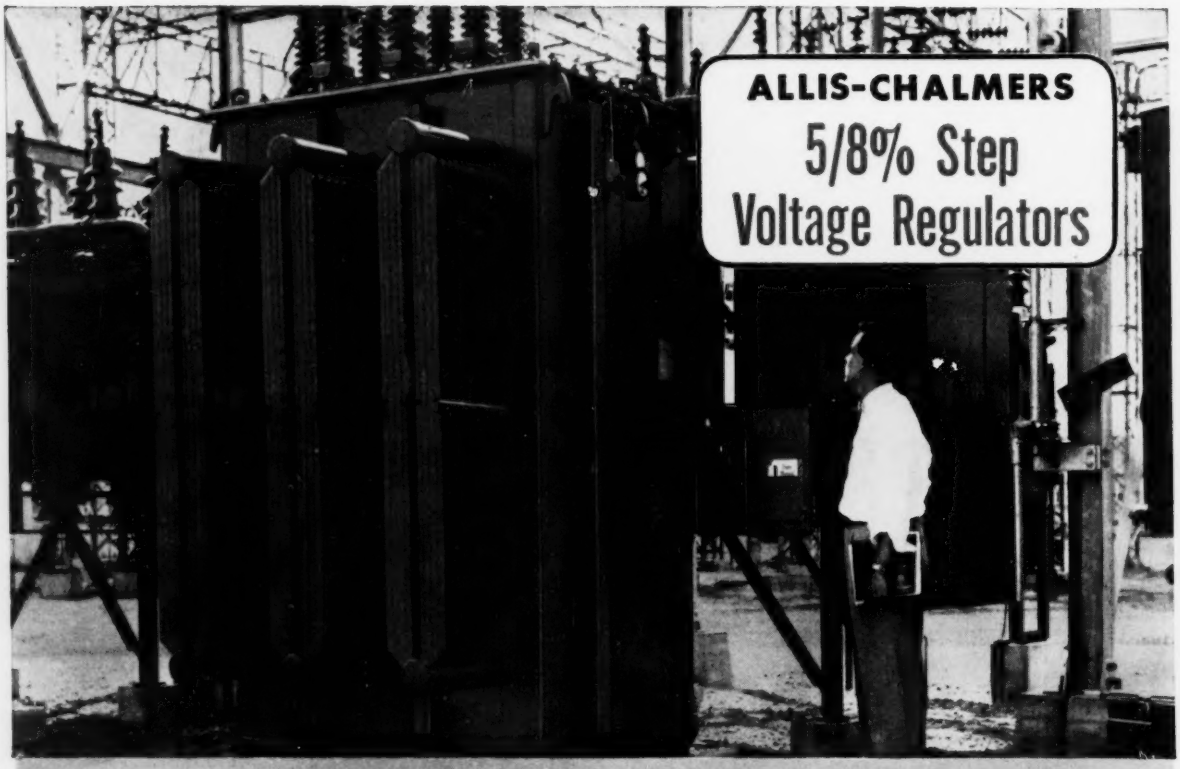

Simple Design Reduces Costs of Three-Phase Voltage Regulation

The simple design of Allis-Chalmers three-phase power regulators means you get highest quality regulation with an absolute minimum of maintenance. You get ± 1 volt band, Class I accuracy, 20% range of regulation, and many famous Allis-Chalmers features that cut costs.

Unit Construction Reduces Maintenance

Thanks to unit construction, there are 78 fewer connections than with other designs. And all connections can be made before the unit is tanked. Untanking for future inspection is especially easy — just remove cover and control cabinet bolts, and lift entire regulator from tank.

Feather-Touch Control Easy to Operate

You save maintenance time with Allis-Chalmers voltage regulators because the *Feather-Touch* control has fewer operating components than any other regulator control. Operation is easy because control components are calibrated. Voltage band and voltage level can be set in less than a minute.

Quick-Break Tap-Changing Mechanism

Fast, efficient tap changing without shock, thanks to the balanced spring operation of the *Quick-Break* tap-changing mechanism, makes contacts last longer. Mechanism operates entirely under oil — there are no adjustments to make, nothing to lubricate.

It pays to get all the facts. Contact your nearby A-C office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4128

Ratings Available	Through 2500 Kva Up to and Including 69 Kv

ALLIS-CHALMERS

Originators of 5/8% Step Regulation